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ABSTRACT

This report identifies and discusses the factors to be considered in determining the feasibility of the centralization, or consolidation, of the instructor training schools under the administration or curriculum control of the Chief of Naval Technical Training (CNTECHTRA). The study considers the alternative options of reducing the present six school sites to (1) a single school or academy, (2) two schools, or (3) three schools. The investigation is divided into two parts: The first explores the qualitative factors, identifying and evaluating the noncost variables relative to the centralization decision, and the second considers economic (cost) factors. The report provides a "present cost" model, based upon resource expenditures for facilities, transportation, labor, and equipment. (Survey populations for qualitative study included 85 administrators, supervisors, and selected senior instructors assigned to the present CNTECHTRA instructor training schools. The comparison group of 24 persons was composed of supervisory and administrative personnel at the Navy technical training schools at San Diego. Quantitative questionnaires were also mailed to the six instructor training sites.) The qualitative analysis identifies 45 variables associated with instructor school functions and eight associated with location factors. It incorporates a summary of comments upon the various aspects of the centralization concept. Also included are summaries of requirements for the use of new construction or modified existing structures for centralization. (Author/LAS)

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TAEG Report No. 38

CENTRALIZED INSTRUCTOR TRAINING FOR NAVAL TECHNICAL TRAINING

Clarence J. Papetti
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Eric K. Green

Training Analysis and Evaluation Group

November 1976

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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TAEG Report No. 38

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This report identifies and discusses the factors to be considered in determining the feasibility of the centralization, or consolidation, of the instructor training schools under the administration or curriculum control of CNTECHTRA. The study considers the alternative options of reducing the present six school sites to: (1) a single school, or academy, (2) two schools, or (3) three schools.

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The report provides a "present cost" model, based upon resource expenditures for facilities, transportation, labor, and equipment. The qualitative analysis identifies 45 variables associated with instructor school functions and 8 associated with location factors. It incorporates a summary of comments upon the various aspects of the centralization concept. Also included are summaries of requirements for the use of new construction or modified existing structures for centralization.

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SECTION I

INTRODUCTION

BACKGROUND

The Chief of Naval Technical Training (CNTECHTRA) coordinates and directs all shore-based Navy technical training and exercises direct command over most units providing instructor training. As part of this function CNTECHTRA is assigned curriculum control for all instructor training courses. Instructor training is conducted at six sites. The Naval Education and Training Center (NETC), Newport, Rhode Island, provides instructor training primarily for officer personnel who instruct in the Navy's Officer Candidate School and for other Navy training activities in the Newport area. The Naval Submarine School (NAVSUBSCOL), New London, Connecticut, prepares instructors for support of submarine training and has some special curriculum considerations to meet the special needs of the Submarine Training System. The Service School Command (SSC), San Diego, California, is the largest instructor training school in the Navy. This school provides instructor training support for west coast Navy training activities and has been designated the curriculum manager for Navy instructor training. Fleet Training Center (FLETRACEN), Norfolk, Virginia, provides instructor training support for east coast Navy training activities and is subordinate to Commander, Training Command, U.S. Atlantic Fleet (COMTRALANT). The Instructor Schools at SSC, Great Lakes, Illinois, and Naval Air Technical Training Center (NATTC), Memphis, Tennessee, provide instructor training in support of Naval technical training conducted in these and other geographic areas.

The following courses of instruction are typically included in various combinations in the instructor training programs: (1) Instructor Basic, which is attended by all personnel filling designated instructor positions, (2) Instructor Shipboard, which provides instructor training for personnel filling shipboard or operational unit instructor positions, (3) Programmed Instruction Techniques, which provides training in programmed instruction writing to selected, experienced instructors, (4) Management and Supervision, (5) School Administration (Navy Schools Management), (6) Submarine Training System, (7) School Administration of Programmed Instruction, and (8) Officer Instructor Indoctrination. Only the Instructor Basic course is taught at all locations.

A previous study[1] conducted by the Training Analysis and Evaluation Group (TAEG) considered the feasibility of centralizing the five eastern

[1] Clarence J. Papetti, Karen D. Lam, and William M. Swope. Instructor Training. TAEG Report No. 17. 1975. Training Analysis and Evaluation Group, Orlando, FL.

schools, leaving the San Diego school intact. The estimated value of the savings under this system was not sufficient to justify an unqualified recommendation to consolidate. However, scale economies indicated that long-term expansion of any of the schools should not be undertaken without a critical reassessment of the implications of centralization. As a result of these findings, the Chief of Naval Education and Training (CNET) directed that an in-depth investigation of alternative plans for centralization be conducted.

In the present study, three alternative schemes for centralization were postulated and form the conceptual bases around which both the qualitative and economic analyses were designed. A brief discussion of these alternatives will serve to provide a perspective for the discussions which follow. The three consolidation alternatives were to combine the six present schools into (1) one school, (2) two schools, or (3) three schools. San Diego, Memphis, and Norfolk were selected as candidate sites because of their location and the fact that each presently has an instructor training school.

The first centralization plan would aggregate the six present schools into a single site. Memphis was arbitrarily selected for the single site. However, if San Diego, Norfolk, or Great Lakes had been selected rather than Memphis as the single-school site, total costs would not change appreciably, although building costs would be somewhat higher in San Diego.

The second consolidation plan proposed in this study is basically the same as that proposed in TAEG Report No. 17 with Memphis[2] being the proposed site of the eastern schools' consolidation while San Diego remains unaltered. Unlike the previous study, however, the cost of the San Diego school is added to the cost of the consolidated eastern site to give the cost for all instructor training programs. This can be compared with the total cost of other proposed consolidation plans.

The third consolidation plan would include a school at Memphis, San Diego, and Norfolk. The decision to examine a three-school system was based upon the fact that transportation costs decrease as the number of schools increases. Increasing transportation costs could offset the decreasing average costs realized from scale economies.

PURPOSE

The purpose of this study is to identify and examine the economic and noneconomic (qualitative) variables which impact upon the decision

[2] The consolidation of the five eastern schools at Great Lakes or Norfolk would generate approximately the same costs as Memphis.

to consolidate or centralize the CNTECHTRA instructor training school system. The advantages and disadvantages of the three alternative approaches to centralization have been quantified wherever possible.

The specific objectives of the study were to (1) assess the perceived impact of centralization on noncost variables associated with instructor staff, school management, curriculum, equipment, and location considerations, and (2) cost analyze the proposed centralization schemes.

The study is limited to examining the centralization of the six CNTECHTRA instructor training schools. For the purpose of the report, centralization is defined as the reduction of the present six-school system into a system which contains either one, two, or three schools. A tacit assumption underlying each of the centralization alternatives is that quality of the curriculum will either remain constant or be enhanced and that enrollment will be stable at forecast levels.

ORGANIZATION OF THE REPORT

The report is organized into five major sections. In addition to this introduction, section II addresses the technical approach to the study including (1) a description of the survey population, (2) the methods used to collect data, and (3) a review of the analytical processes used in treating quantitative and qualitative data. Section III discusses the results obtained from the qualitative analyses. This includes the identification of key variables which would be affected by centralization, an analysis of the opinions held by selected groups within the survey population, and a summary of the respondents opinions about the effects of centralization. Section IV discusses the results of the economic analysis. Findings relating to resource categories are reported, and a "present cost" analysis is provided. Section V presents the conclusions derived from the study.

SECTION II

TECHNICAL APPROACH

A variety of methods was employed to accomplish the study objectives. A brief chronology of these methods is provided here as a summary and guide to their explication in subsequent portions of this section.

- A rational analysis was conducted to reduce centralization alternatives to the three most feasible plans of one, two, and three schools.
- Quantitative (cost) questionnaires were mailed to the six instructor-school sites to obtain data relevant to estimating costs associated with centralization.
- Visits were made to CNTECHTRA, NATTC Memphis, and Naval Facilities Engineering Command (NAVFACENGCOM), Southern District, to obtain additional costing data and qualitative information.
- Data on the three centralization alternatives were provided to NAVFACENGCOM, Southern District, which utilized it in developing new construction requirements for the alternatives.
- CNTECHTRA was provided the centralization data and developed the plans for modification of existing facilities to accommodate the alternatives.
- Mail-out questionnaires were developed to assess opinions of the qualitative impact of centralization.
- Structured interviews based on the mail-out questionnaires were conducted at select school sites. Comparison of the information obtained by these methods aids the assessment of data validity and method utility.
- Qualitative data obtained in the mail-out questionnaires and structured interviews were subjected to frequency tabulations, a stepwise regression analysis, and a factor analysis to provide a succinct summary of perceptions of qualitative changes due to centralization.
- An economic analysis was conducted of the three centralization schemes to provide a quantitative basis of comparison. This analysis was composed of assessments of personnel, transportation, and facility costs, as well as a present cost analysis.

SURVEY POPULATION

The primary survey group for the qualitative study consisted of those personnel considered most knowledgeable and experienced in instructor training. This sample included 85 administrative and supervisory personnel and selected senior instructors assigned to the present CNTECHTRA instructor training schools. The "comparison group" of 24 persons was composed of supervisory and administrative personnel located at the Navy technical training schools at San Diego. The latter individuals were recent graduates of the CNTECHTRA instructor training schools. See table 1 for a description of the respondents to the qualitative questionnaire.

QUESTIONNAIRE DESIGN

QUALITATIVE QUESTIONNAIRE. The variables to be used in the questionnaire were identified by several means including literature reviews, personal visits to school sites, telephone contacts with personnel associated with instructor training, and a conference with TAEG professionals representing a broad range of expertise in education and training. A list of several dozen variables relevant to centralization of instructor training was identified by the project team. These variables were configured into a five-part questionnaire. Part I utilized a seven-point scale ranging in value from a major decrease (-3) to a major increase (+3) to assess the impact of centralization on instructor staff variables, administration variables, curriculum variables, equipment and media variables, and a variety of other variables. The higher the absolute rating, the greater the impact of centralization. A positive rating indicates a positive impact, while a negative rating indicates a negative impact. Part II used a five-point scale ranging in value from none (0) to key factor (4) to assess factors which would affect the choice of location for the centralized schools. Similar to part I, a high score reflects a high impact. Part III was a multiple choice item which assessed the overall opinion toward consolidation. Part IV also used a multiple choice format to assess opinions on the most desirable configuration of schools for centralization. Part V simply required the respondent to indicate whether he was for or against centralization and asked in an open-ended question the reasons for his position.

The complete questionnaire containing a summary of responses for the primary group is provided in appendix A and for the comparison group in appendix B.

QUANTITATIVE QUESTIONNAIRE. The economic survey collected data on

TABLE 1. CATEGORIZED DESCRIPTIONS OF QUALITATIVE QUESTIONNAIRE RESPONDENTS

GRADE OR STATUS		FUNCTION		ACTIVITY		LOCATION	
PRIMARY GROUP (N-85)							
Civilians							
GS-7	5	Administrative	32	Instructor School	64	Groton	16
GS-9	6	Supervisory	12	CNTECHTRA Staff	6	Great Lakes	13
GS-11	3	Instructors	41	Other Staff	15	Memphis IT School	15
GS-12	2	Total	85	Total	85	Memphis CNTECHTRA	6
GS-13	6					Newport	9
	22					Norfolk	12
Enlisted						San Diego	13
E-6	15					Orlando	1
E-7	17					Total	85
E-8	5						
E-9	5						
	42						
Officers							
O-2	2						
O-3	4						
O-4	8						
O-5	6						
O-6	1						
	21						
Total	85						
COMPARISON GROUP (N-24)							
Civilians	1	Administrative	1				
Officers & Warrant Officers	4	Supervisory	18				
Enlisted	19	Instructors	5				
Total	24	Total	24				

"direct"[3] resource requirements and costs from several sources. Actual student input for the six instructor training schools was supplied by the schools via questionnaires. The questionnaire used to collect quantitative (cost) data contained three basic parts. The first part dealt with group origin and destination of trainees at instructor schools. The second part listed the number of instructors and trainees at each instructor school. The third part listed the individual student origin and destination. A sample of the forms utilized to collect this data is contained in appendix C. For this study, student input (total and per course) was based upon CNTECHTRA's Training Operations Plan (TOP) for FY 1976. Transportation costs were computed using the current student geographical distribution as determined from an origin and destination survey of students attending each of the six instructor schools. Staff, instructor, and equipment requirements for each centralization scheme were developed by personnel at the Memphis instructor school. Costs for new facilities were calculated by NAVFACENGCOM, Southern Division. The type and size of required structures were specified by the TAEG study team. Facility renovation costs for a particular building were supplied by CNTECHTRA personnel and these costs were compared to the cost of building new facilities.

ADMINISTRATION OF QUESTIONNAIRES

Qualitative questionnaires were mailed to instructor training schools at the NETC, Newport, Rhode Island; the NAVSUBSCOL, New London, Connecticut; and the FLETRACEN, Norfolk, Virginia. Questionnaires were administered by the study team in a highly structured interview during visits to the NATTC, Memphis, Tennessee; the SSC, Great Lakes, Illinois; and the SSC, San Diego, California. A comparison of the data obtained by these two basic means permits judgment of the validity of the data.

The quantitative (cost) questionnaires were mailed to the six school sites with explanations and clarifications given by telephone where necessary.

QUALITATIVE QUESTIONNAIRE ANALYSIS

INDIVIDUAL ANALYSIS OF ITEMS. Each item of part I of the qualitative questionnaire was analyzed individually. To obtain an average score for

[3] By "direct" is meant those resources and costs associated only with the following courses; upon termination of those courses, these "direct" resources would no longer be incurred: (1) Instructor Basic, (2) Instructor Shipboard, (3) Programmed Instruction Techniques, (4) Management and Supervision, (5) School Administration (Navy Schools Management), (6) Submarine Training System, and (7) Officer Instructor Indoctrination. These were the appropriate courses listed in the 1976 Training Operations Plan.

each variable, the numerical ratings for each variable were algebraically summed and the sum divided by the number of respondents. The standard deviation, variance, and distribution of ratings were also computed. The analysis of factors in part II of the questionnaire was similar to that of part I except for the absolute values of the scale. Using average scores, the variables from part I and part II of the questionnaire were ranked in descending order. The 16 variables with the highest score from part I and the 4 factors with the highest score from part II were selected as potentially most significant in considering centralization.

Parts III, IV, and V of the questionnaire were concerned with the opinions of the survey population regarding centralization, the optimum number of instructor schools, the locations favored, and the rationale for their support or opposition to centralization. These opinions were analyzed in terms of percentages of respondents associated with the various response alternatives. In addition, a summary of respondents' reasons for or against centralization was tabulated.

Data from all parts of the qualitative questionnaire were also analyzed in terms of a number of different demographic and/or categorical variables. Seven different classification schemes were used to classify the respondents in the primary group. Each of the seven sets contained from two to six subsets. The seven sets, hereafter identified as categories, are as follows:

1. Respondents For and Against Centralization:
   - "For"
   - "Against"

2. Administered or Mailed Questionnaires:
   - Administered
   - Mailed

3. Respondents by Military or Civilian Status:
   - Civilian (All)
   - Enlisted (All)
   - Officer (All)

4. Respondents by Civilian or Military Ranks:
   - Lower Rank (GS 7-9, E 6-7, O 2-3)
   - Upper Rank Enlisted (E 8-9)
   - Upper Rank Civilian (GS 11-13)
   - Upper Rank Officer (O 4-6)

5. Respondents By Duties Performed:
   - Administrators
   - Supervisors
   - Instructors

6. Respondents by Organization of Assignment:
   - Instructor School Staff
   - CNTECHTRA Staff
   - Other Staff

7. Respondents By Location of Assignment:
   - Memphis
   - Great Lakes
   - Groton
   - Newport
   - Norfolk
   - San Diego

The above categories are not mutually exclusive; i.e., the same individuals can appear in more than one category. Therefore, comparison of opinions as a function of demographic subcategories or categorical influences was restricted to those within the same category. An effort was made to explain differences which existed in ratings among subcategories.

The responses of the comparison group were subjected to the same analyses as the primary group. However, no subcategory analysis as discussed above was made. Centralization may represent a highly emotional issue to those currently involved in instructor training. Therefore, the decision was made to assess the impact of self-interest in the questionnaire data by comparing responses of the primary respondents to those of the comparison group.

An interesting side issue was explored in which an analysis was made of the agreement among respondents within selected categories. The variance (σ^2) of the subcategory within each category was tabulated to provide an index of agreement of subcategories. Only the variables from parts I and II of the questionnaire were included in this analysis.

STEPWISE REGRESSION. The second technique employed for analyses of qualitative data utilized a stepwise regression model which used as a dependent variable the overall ratings of agreement or disagreement with centralization.[4] The dependent variable was a two-step scale of opinion "for" or "against" centralization. In essence, this analysis employs a model which selects the qualitative item most highly related to the respondents' centralization opinion first, then the next most highly

[4] W. J. Dixon (Ed.) BMD Biomedical Computer Programs. (3rd ed.) Los Angeles: University of California Press. 1973. pp. 305 ff.

related item is selected, and so on.[5] The regression technique was used to "filter" out the handful of qualitative factors that appears to be most highly related to the consolidation judgments of the respondent population.

FACTOR ANALYSIS. The third technique for the analysis of qualitative questionnaire data was a factor analysis. A certain degree of redundancy and overlap exists in any set of variables selected to reflect the impact of centralization. It was the purpose of the factor analysis to eliminate these redundancies and overlap and bring into focus those major factors which are most important in the centralization decision.

QUANTITATIVE ANALYSIS

PRESENT COST ANALYSIS. The resources used by each consolidated plan must be compared to the resources used by the present system, assuming identical student input over the 5-year planning period. Instead of attempting to compare the physical amounts of each resource, all resources were converted to their dollar value to provide a common basis for comparison. These dollar values for each system, however, include future expenditures which must be discounted and transformed into present dollars. Therefore, a discrete present cost (PC) model, which changes future costs to present costs, was used so that the present cost of each centralization plan and the present instructor training system could be compared with each other.

As stated above, a simple discrete PC model was used to discount the future costs of each system to their respective present values. Along with the initial outlays for facilities and equipment, and the annual operating costs, the remaining value of assets was also discounted and subtracted from the initial outlays. Thus, the present cost of each centralization system is given by:

$$PC = X_0 + \sum_{i=1}^{n} \frac{X_i}{(1+r)^i} - \frac{R}{(1+r)^n}$$

where X_0 is the initial outlay for plants and equipment, n is the number of years in the planning period, X_i is the annual operating cost in the i^{th} year, r is the discount rate, R is the remaining value of initial

[5] The model is as follows:
$J = f(w_1V_1 + w_2V_2 + \ldots\ldots w_iV_i \ldots\ldots + w_mV_m)$ where $i = 1, 2, 3, \ldots i \ldots m$
where J = judgment or opinion on consolidation, 1-6 scale value; or "for" vs. "against"
f = linear regression function
w_i = weight attached to selected item
V_i = item selected

asset outlay.[6] Through the use of this model, the present cost of each system can be computed and compared.

The following is a list of the major assumptions used in the economic analysis:

1. Five-year planning period,

2. Student throughput is constant over time,

3. New classroom construction costs are based on 15 percent of the students in each course receiving self-paced instruction in 5 years,

4. Ten percent discount rate,

5. Each school, whether centralized or not, has the same instructional material, syllabus, and equipment,

6. Student assignments to schools are based on the present system. For example, a student, who under the present assignment system is sent to Great Lakes, would now be sent to the consolidated instructor school nearest to Great Lakes, and

7. Fifteen percent of the instructors are civilian; this is invariant to the instructor training system's configuration.

[6] This assumes straight line depreciation over a 20-year facility life or 10-year equipment life with no salvage value. Therefore, given a 5-year planning period, the remaining discounted value is equal to:

$$\frac{R}{(1+r)^5} = \frac{X_0 - 5\left(\frac{X_0}{20}\right)}{(1+r)^5} = \frac{3X_0}{4(1+r)^5}$$

SECTION III

QUALITATIVE DATA

This section presents the results of the analysis of qualitative factors important to the centralization decision. Characteristics of the instructor school staff, school management, administration, curriculum development, curriculum control, equipment, media, and instructional aids are identified, analyzed as a function of a number of demographic and categorical variables, and ordered in terms of their potential importance to the centralization decision.

KEY QUALITATIVE VARIABLES IN CENTRALIZATION

Each variable of the qualitative questionnaire was ranked in descending order of average rating as determined from the primary group. The 16 variables with the highest mean score taken from the primary group are presented in table 2. Also presented in table 2 are the mean ratings given to these variables by the comparison group. The mean ratings and rank orders represent the perceived absolute and relative impact of centralization on the various factors. The factors are discussed here in order of their rank in the primary group. The analysis and discussions are derived from a combination of the mean ratings (on the seven-point scale) and the respondents statements accompanying the ratings.

The variable ranked first, "ease of revision," refers to the ease of making changes, additions, deletions, and improvements in the instructor training school curriculum. The more centralized the system becomes, the more efficient it will be to revise the curriculum, to develop feedback channels, and to coordinate and disseminate course revisions. The larger staff will allow instructors to devote more specialized effort to training tasks.

"Standardized presentation" was ranked second. This implies a perception that with fewer schools it will be possible to exercise more supervision and control over presentations to insure they utilize the most effective techniques. Some concern was expressed, however, that presentation techniques not be made so restrictive and rigid that the humanizing contributions of the skilled instructor be inhibited.

"Automation of records" was regarded as a favorable consequence of centralization; the fewer schools and larger populations provide a more efficient basis for the increased use of computers for recordkeeping, scheduling, grading, and statistical analysis. This was not an overwhelming opinion but the 1.3 mean rating indicates a solid trend.

TABLE 2. VARIABLES SELECTED* ON THE BASIS OF MEAN RATINGS

Variable Title	Primary Group** Mean	Comparison Group Mean
Ease of Revision	1.5	1.1
Standardized Presentation	1.4	1.2
Automation of Records	1.3	0.9
Interservice Coordination	1.3	0.8
Modernization Capability	1.3	0.9
Feedback Application	1.3	1.1
New Course/Track Development Capability	1.1	1.1
Equipment Utilization Efficiency	1.1	1.0
Equipment Selection Capability	1.1	0.6
Management/TPC Review Frequency	1.0	0.7
Feedback Implementation	0.9	1.1
Managerial Efficiency	0.9	1.0
Scheduling Efficiency	0.9	0.8
Ability Grouping Capability	0.9	0.7
Student Test/Evaluation System Efficiency	0.9	0.6
Self-Paced Instruction Development Capability	0.9	0.4

* Selected from the 45 variables of part I in the qualitative questionnaire.
** $\pm$ 0.9 or more judged by study team to include all the significant variables.

"Interservice coordination," the communication of information and innovations between the Navy instructor school system and other military training activities, was perceived as increasing under centralization. A more consolidated Navy instructor school system could function as a center for instructional development and a focal point for exchange of professional knowledge and innovations with other military instructional activities and organizations.

With a centralized instructor school, it was regarded by respondents to be more likely that it will be economically feasible to use more modern equipment, media, and training aids. The condition of facilities and equipment can be more easily monitored and replaced when necessary, thus maintaining the facilities, equipment, and training aids in top condition.

Respondents also believed that more effective and direct feedback procedures would be possible. Revisions in the curriculum could be made with less difficulty because channels would be more direct and the time required for the developmental staff to make such changes would be minimized.

Centralization of the schools was also expected by respondents to speed the development of new courses or tracks. The larger schools would have greater opportunities to assign the best qualified instructors to curriculum development. In addition, respondents perceived that the more close-knit environment would assist course developers in their research and that they would have easy access to subject-matter specialists and training data making it easier to field test new material and equipment. The Training Program Coordinators (TPCs) and CNTECHTRA management generally would be able to maintain a much closer interaction with a centralized instructor school. More frequent observation of instructional activities and curriculum review would be possible. This should result in improved understanding of requirements and quicker resolution of training problems.

An increase in managerial efficiency from centralization was anticipated by the respondents. This was based largely on the belief that the larger populations within a centralized school would justify a more permanent and professional managerial staff with greater capabilities for designing, maintaining, and operating a more efficient training program.

Scheduling efficiency is expected to be improved from centralization, since the larger student flows and staff would provide more flexibility in the use of classrooms and other facilities. Larger throughput would permit the grouping of students on the basis of background, knowledge, and learning ability. It should be noted, however, that there was divergent opinion among respondents regarding the homogeneous grouping of students; many prefer heterogeneous grouping.

Increased efficiency of student test and evaluation was expected to result from centralization; i.e., test construction, field testing, administration, evaluation, interpretation of scores, and reliability/validity checks would be improved. A larger school would have a greater capability to bring together staff instructors and others best qualified to accomplish these tasks on a continuing basis. The development of self-paced instruction would likewise be benefited for the same reason.

Opinion was widely split on whether the quality of instructors would be improved; however, a number of respondents considered that the centralized school would provide a larger group of candidates from which to choose resulting in assignment of instructors to areas of their best competency. It was the general consensus based on the qualitative questionnaire responses that centralization would have little effect on instructor morale.

ANALYSIS BY CATEGORY OF RESPONDENTS. The primary group was further divided into seven categories, each of which encompassed the entire population. Each category was further divided into a number of subcategories. Within each major categorization, the subcategories were mutually exclusive, allowing direct comparison of the members opinions in each subgroup. The seven categories referenced above are as follows:

1. Respondents "for" or "against" centralization
2. Administered or mailed questionnaires
3. Respondents by military or civilian status
4. Respondents by civilian or military ranks
5. Respondents by duties performed
6. Respondents by organization of assignment
7. Respondents by location of assignment.

Respondents For or Against Centralization. With only a few exceptions, those "for" centralization expected strong impacts on the variables from consolidating the schools and those "against" expected relatively smaller impacts on the same variables.

Administered or Mailed Questionnaires. Differences were expected in the mean ratings between those to whom the questionnaires were administered and those to whom the questionnaires were mailed. Those responding to the administered questionnaires were thoroughly briefed, the purpose of the study and of the questionnaire explained, terms and concepts defined, and posttest questions answered. These respondents were expected to provide more thoughtful and objective ratings of the variables than those responding to the mailed questionnaires and in the judgment of the study team achieved this expectation. Comparison of the mean ratings of the two categories shows a marked difference. Individuals to whom the questionnaire was administered consistently indicated that they expected

a greater impact from centralization than did those individuals to whom the questionnaire was mailed. For example, those administered the questionnaire would expect a considerable increase in quality of instructors, while those to whom the questionnaire was mailed expected little impact.

Respondents by Military or Civilian Status. The respondents in this category were subdivided into three subcategories--civilians, enlisted, and officers. Results of the analysis indicate that the mean ratings of the variables differed among these subcategories. Officers' overall ratings were lowest, indicating that they expected centralization to have little or negative effects on the variables; enlisted respondents indicated moderate effect, and civilians' mean ratings were comparatively high, indicating that centralization would have a considerable impact on the variables. For example, officers expected a sharp decrease in the effectiveness of instructor indoctrination, a severe decrease in instructor morale, a negligible effect on the adoption and use of feedback statistics, little impact on the rate of adoption of innovations, and a reduced ability of the program to cope with unique training situations.

Civilians' overall mean ratings, on the other hand, indicated that with centralization they expected significant improvements in the ease of making curriculum revisions, in the ease of implementing new courses, in the application of feedback information, in standardization of presentations, and in the adoption of innovations. They also expected a decrease in the staff size, less clerical support required, a decrease in requirements for maintenance technicians, but little impact on ability of the training organization to cope with unique training situations.

The enlisted personnel (overall) did not expect centralization to have much impact on most variables. Exceptions were increased feedback application, increased ease of revision, more standardized presentations, increased interservice coordination, and automation of records.

As a partial explanation of the differences between civilian and military mean ratings, it is noted that the civilian staffs, representing 26 percent of the survey population, have an association with the instructor schools which is generally more stable and permanent than the military staffs. As determined in an earlier report (TAEG Report No. 17), civilian instructors, supervisors, and administrative personnel usually have extensive formal academic backgrounds and experience in education and training. Under these circumstances, the civilian personnel of the instructor training school may provide valuable insight and expertise for instructor school planning. This observation, of course, does not diminish in any way the equally valuable contributions made by the highly qualified military personnel of the instructor schools.

Respondents by Civilian or Military Ranks. The preceding analysis of respondents opinions by overall military or civilian status takes on a somewhat different position when the overall military and civilian respondents population is broken-down into military and civilian ranks. The survey population was examined in four separate subcategories: (1) lower ranks (civilians, GS 7 to 9, enlisted, E6 to 7, and officers, 02 to 3), (2) upper rank enlisted personnel (E8 to 9), (3) upper rank civilian respondents (GS 11 to 13), and (4) upper rank officers (04 to 6). Comparison of mean ratings of variables by these subcategories indicates that upper rank civilians consistently gave more positive ratings than did the other three subcategories. Next highest ratings were given by upper rank enlisted followed by the lower rank enlisted and upper rank officers, respectively.

Upper rank civilians forecast that centralization would have a large positive effect on such variables as ease of curriculum revision, application of feedback information, specialization of assignment, new course/track development capability, interservice coordination, and the development of self-paced instruction. They also anticipated reduction in the number of staff required. Lower rank civilians, though somewhat lower overall in their ratings, indicated higher effects on variables such as interservice coordination, standardized presentations, modernization capability, and ease of curriculum revision.

Upper rank enlisted respondents expected a reduction of staff requirements, a reduction in the quantity of equipment required, a decrease in the number of operating and maintenance technicians, and a reduction in the use of civilian instructors. However, they foresaw a slight decrease in specialization of assignment of instructors and little effect on quality of instructors. The upper rank officers consistently saw little effect of centralization on all the variables with the exception of predicting a sharp decrease in instructor morale, which is in contrast to the negligible effects on morale estimated by all others.

Respondents by Duties Performed. This category was based on examination of the population by type of duty assignment--administrators, supervisors, or instructors. With a few exceptions, there was fairly close agreement between the three subcategories in their estimates of the effect of centralization on the variables.

The administrators were the most conservative, forecasting negligible effect on instructor indoctrination, inservice training, and rank structure but some improvement in instructor morale (which supervisors and instructors rated as no effect). Supervisors expected little effect on specialization of instructor assignment, larger than average increases in innovations and new course/track development capability. Instructors expected a considerable increase in managerial efficiency. Also, instructors expected a greater opportunity for specialization, an improvement in interservice

communication, and improvements in the development and use of feedback information.

Respondents by Organization of Assignment. In this category the survey population responses were subdivided and examined in three subcategories: (1) personnel assigned to CNTECHTRA instructor schools, (2) respondents from CNTECHTRA staff, and (3) other staff personnel. "Other staff," consisting of 15 personnel (18 percent) in staff positions concerned indirectly with instructor school operations at the various bases, were conservative in responses and of the opinion that only slight effects would result from centralization. The instructor school staff and the CNTECHTRA staff were generally in agreement. Both anticipated significant positive effects from centralization.

Respondents by Location of Assignment. In this category the questionnaire respondents were subdivided and examined in six subcategories, based upon their location. (Excluded from this analysis were the six respondents from CNTECHTRA and a single respondent from Orlando.) The Memphis respondents predicted the effect of centralization to be greater than did the respondents from other locations. Norfolk, Great Lakes, Groton, and San Diego forecast a much smaller effect. The Newport respondents predicted little or no effect.

INDEX OF AGREEMENT. To assist the decision maker in identifying data to which he can attach more or less credence an effort was made to identify the degree to which the respondents in the subcategories were internally in agreement. The assumption being that more reliance can be placed on data that has a higher degree of internal consistency. An analysis was made comparing the variances of ratings of the 45 variables by each of the subgroups within the seven categories described above. These data are summarized in table 3. This exercise provides an estimate of the consistency of the respondents' opinion within each category. The lower values indicate closer agreement. For example, officers (59) were in much greater agreement among themselves than were enlisted personnel (81).

OPINIONS AND ATTITUDES TOWARD CENTRALIZATION

The respondents were asked categorically if they were in favor or opposed to the centralization of the present six instructor schools. A summary of these responses, by selected subcategories, is shown in table 4. The various subcategories exhibited considerable differences in their opinions toward centralization. For example, 86 percent of civilians were in favor of centralization compared to 24 percent of the officers.

TABLE 3. INDEX OF AGREEMENT WITHIN GROUPS
(FROM QUESTIONNAIRE PART I)

Primary Group Category	Groups in Each Category	*Variance (Sum of SD^2)
1	Respondents For and Against Centralization:	
	For	73
	Against	73
2	Administered or Mailed Questionnaires:	
	Administered	62
	Mailed	79
3	Respondents by Military or Civilian Status:	
	Civilian (All)	66
	Enlisted (All)	81
	Officer (All)	59
4	Respondents by Civilian or Military Ranks:	
	Lower Rank (GS 7-9, E 6-7, O 2-3)	83
	Upper Rank Enlisted (E 8-9)	63
	Upper Rank Civilian (GS 11-13)	58
	Upper Rank Officer (O 4-6)	58
5	Respondents By Duties Performed:	
	Administrators	68
	Supervisors	83
	Instructors	86
6	Respondents By Organization of Assignment:	
	Instructor School Staff	83
	CNTECHTRA Staff	65
	Other Staff	53
7	Respondents By Location of Assignment:	
	Memphis	58
	Great Lakes	64
	Groton	70
	Newport	53
	Norfolk	75
	San Diego	68
Comparison Group		81

*NOTE: Lower value indicates closer agreement within category.

TABLE 4. PERCENTAGE OF RESPONDENTS BY SELECTED SUBCATEGORIES WHO WERE IN FAVOR OF OR OPPOSED TO SOME FORM OF CENTRALIZATION

Primary Group	For Centralization (Percent)	Against Centralization (Percent)
Civilian Respondees (All)	86	14
Enlisted Respondees (All)	57	43
Officer Respondees (All)	24	76
Administrative Respondees	47	53
Supervisory Respondees	50	50
Instructor Respondees	66	34
Instructor School Staff	59	41
CNTECHTRA Staff	83	17
Other Staff	33	67
Memphis	100	0
Great Lakes	54	46
Groton	44	56
Newport	0	100
Norfolk	75	25
San Diego	31	69
Total Primary	54	46
Comparison Group	71	29

Fifty-four percent of the primary group were in favor of centralization compared with seventy-one percent of the comparison group. This may be explained by the fact that the primary group includes individuals who are currently involved with the instructor training programs and any form of centralization would be disruptive to many of the current programs and to their personal lives. It is expected that most would view such disruption with apprehension. On the other hand, the comparison group would most likely tend to be more objective since their personal and professional lives would not be affected by centralization.

Scaled Opinions Concerning Centralization. In an effort to gain an understanding of the strength of the opinions held toward centralization, each respondent was asked to indicate on a six-point response "scale" his overall opinion concerning centralization or consolidation of the instructor schools. Table 5 is a summary of the responses.

TABLE 5. SUMMARY OF RESPONSES CONCERNING CENTRALIZATION

Response	Primary Group	Comparison Group
	Percent	
Strongly recommend	17	26
Appears worthy of cost and qualitative analysis	46	27
A good idea but there is no urgency	13	12
No improvement over the present system	8	16
A poor idea, not as good as present system	8	8
A very poor idea with serious disadvantages	8	11

Summary of Opinions in Favor of Centralization. The majority of respondents both primary and comparison either favored centralization or viewed centralization as a potential improvement over the present system with the reservation that it should be studied in further detail before undertaken. Respondents were also requested to provide the reasons for their decision for or against centralization. A summary of the reasons in favor of centralization is provided in table 6.

TABLE 6. SUMMARY AND FREQUENCY OF RESPONSES IN FAVOR OF CENTRALIZATION

Stated Reason for Decision	Number Offering Reason					Total
	Primary Group			Comparison Group		
	Adm.	Supv.	Inst.	Adm.	Supv.	
More standardized curriculum and instruction	9	2	12	3	4	30
More economical use of resources	9	3	5	2	5	24
Improved administration & management	7		3	1	1	12
Improved utilization of instructor specialized skills	4		2	2		8
Increased general efficiency	3	2	1		1	7
Improved curriculum revision/ implementation	2		4		1	7
Improved instructor selection criteria	3		3			6
Improved quality of instruction and training	3	2				5
Improved training equipment and instructional aids	1		3	1		5
More professional organization/ personnel	4		1			5
More innovative training programs	2	1	1			4
Increased instructor quality	2		1			3
Improved coordination capability			2		1	3
Improved instructor/student morale	1		1			2
More clearly defined responsibilities	1		1			2
Increased CNTECHTRA supervision capability	1		1			2
Improved training effectiveness	2					2
Improved civilian career/ promotion status	1					1
Improved in-service training	1					1
Improved statistical analysis capability	1					1
Elimination of "tenant status" of IT schools	1					1
Combined officer/enlisted training			1			1
Improved feedback process					1	1
Increased research capability	1					1
Decrease in staff personnel	1					1
Improved instructor performance	1					1

Personnel in favor of centralization anticipate that such an action would result in more efficient operation in terms of improved use of available resources and facilities and provide an improved environment for curriculum development and innovations. Principal opinions with regard to the impact of centralization were:

- A standardized curriculum would be much easier to implement, maintain, and improve.
- Operating costs should be lower as the facilities, equipment, and staff should be more fully utilized.
- The quality of instruction should rise as there is both more expertise and competition to ensure it.
- Specialization by instructors could be encouraged as the number on board would allow it.
- A better promotion pattern should be available to the civilian instructors.
- A larger number of students and classes on board would make it economically feasible to invest in more special equipment that is desirable but not feasible for small schools.
- Inservice training for instructors should improve greatly because of the possibility of staff specialization.
- Innovations should occur more frequently as a result of pooling the professional talent.
- More useful statistical data would be more readily available for analysis and action.
- The opportunity for greater pride in being a member of the staff should improve overall instructor performance.

Opposition to the centralization of instructor schools was based upon a number of considerations. Resistance to change is always a factor when considering alteration of an existing system, especially when it has existed and performed reasonably well over a considerable period of time. The principal criticisms of centralization given by those opposed to it were: (1) decreased response to local command or technical training school needs, (2) excessive travel time and costs, (3) no cost reductions, or increased costs, would occur, (4) decreased flexibility and adaptability to local needs, (5) increased family separations, (6) decreased morale, and (7) no significant advantages to be

achieved. A summary of reasons against centralization is provided in table 7.

Certain locations, such as Newport and Groton, oppose centralization on the basis of the specialized nature of their activities. Newport, for example, finds it desirable to retain the instructor training since a large percentage of officer students are located at the officer training center. The school is small, with an estimated annual attendance of 165 (13 per average class) and a staff of 3.

Groton, likewise, favors retention of its school at that location because of its relationship to the submarine activities which are also located at Groton. All instructors at the Groton instructor school were reported to be submarine qualified, and most were of the opinion that the beneficial interaction between the instructor school and base activities would suffer if the school were to be moved.

Norfolk favors retention of the instructor school at that location because of the Instructor Shipboard course, which serves the Fleet activities centered at Norfolk and in the surrounding area. This viewpoint was shared by San Diego, which has a similar Fleet service mission. However, certain of the centralization options under consideration included the continued use of one or both of these locations.

LOCATION OF THE SCHOOL

The feasibility of centralization will, in part, be determined by the success in selecting an appropriate site. This section of the questionnaire obtained the opinions of respondents as to what were the essential and critical characteristics of a location which should be taken into account when selecting a site for a centralized instructor school.

CHARACTERISTICS OF THE SCHOOL SITE. The following characteristics were identified as useful criteria for evaluating a potential location:

1. The availability of adequate housing and messing facilities for the support of the school staff, students, and dependents.

2. The availability of adequate facilities for classrooms and support of the instructor school.

3. The proximity of the centralized instructor school to: support facilities which include an adequate printing service and a capability for the development of instructional aids and training devices; technical training schools which provide a ready environment for practice teaching, ready feedback on the performance of graduate instructors, and

TABLE 7. SUMMARY AND FREQUENCY OF RESPONSES AGAINST CENTRALIZATION

Stated Reason for Decision	Number Offering Reason					Total
	Primary Group			Comparison Group		
	Adm.	Supv.	Inst.	Adm.	Supv.	
Decreased response to local command or tech school needs	6	3	2	1	1	13
Travel costs would be excessive (and time)	10	1		1	1	13
No cost reductions, or increased costs, would occur	4	6	1		1	12
Decreased flexibility and adaptability to local needs	1	2	1	1		5
Increased family separations would occur	3		1		1	5
Decreased morale	2	2	1			5
No significant advantages to centralization	2	2				4
Present locations have unique requirements, best served	1	2			1	4
Loss of local feedback (tech schools)	2	1	1			4
Would adversely affect initiative	1		1		2	4
No improvement in quality, reduced effectiveness	1		2		1	4
School(s) would be too large and complex	1				2	3
Officer training activities - concentrated in present location	2					2
Present system works well	2					2
Would lose informality & intimacy of smaller schools		1	1			2
If not located adjacent to areas of Fleet concentration	1		1			2
Problems in officer detailing process	1	1				2
Would cause deterioration in military instruction			1		1	2
Decreased inservice training	2					2
Loss of interaction between schools and graduates	1					1
Represents "empire building"		1				1
Removes administrators from student contact		1				1
Would lack cooperating interning schools		1				1
Increased staff size			1			1
Would cause shift to civilian staff instructors				1		1
Decreased expansion capability			1			1
Fewer shore billets					1	1

the opportunity for operational units to obtain assistance from the instructor school staff; research and development organizations which provide consultation and development services for the instructor schools; the CNTECHTRA staff since nearly all instructors operate in schools under CNTECHTRA and there is a continuing need to provide close coordination of curriculum development to maintain supervisory and management interaction and to develop efficient evaluation and problem solving activities.

4. The severity of the climate was a factor to be considered although not of major importance. Those located in the more severe climate were more cognizant of this factor.

SCHOOL LOCATION AND CONFIGURATION. Each respondent was asked to express an opinion as to the most desirable configuration and location of a centralized instructor school. The following data indicates the percentage of the respondents who favored each of three alternative configurations:

Configuration	Primary Group	Comparison Group
One East Coast-One West Coast	24%	64%
One East Coast-One West Coast-One Central	40%	36%
One academy	28%	0

In the primary group, the three-school system was favored by officers, instructors, administrators, and enlisted personnel. It was also preferred by personnel currently located at Great Lakes, Newport, Norfolk, and San Diego. The two-school system was supported by supervisors and "other staff" personnel. The single school concept was supported by most civilians of the CNTECHTRA staff. The comparison group favored the two-school concept by a wide margin (64 percent); next was the three-school system, and none selected the academy. It should be noted that the respondents made their selections on a subjective basis without benefit of knowing whether there would be any cost savings from centralization.

A summary of the location and configuration preferences of the primary group is presented in table 8. For those who expressed a preference for a single academy, most would prefer to have the academy located at Memphis. Those who expressed a preference for two sites were clearly in favor of locating one of the schools at San Diego but there was less agreement as to where the second school should be located. The three most mentioned locations for an eastern (second) school were Memphis, Norfolk, and Orlando. For those expressing a preference for three schools, San Diego was again the most frequently mentioned site. The three locations most preferred by those wanting three schools were Memphis, San Diego, and Norfolk.

TABLE 8. A SUMMARY OF LOCATION AND CONFIGURATION PREFERENCES AS EXPRESSED BY THE PRIMARY GROUP OF RESPONDENTS*

Configuration	Location	Percent
One Site	Memphis	79
	Great Lakes	7
	Other	14
		100
Two Sites	San Diego/Norfolk	34
	San Diego/Memphis	25
	San Diego/Orlando	25
	San Diego/Charleston	8
	Memphis/Pensacola	8
		100
Three Sites	San Diego/Memphis/Norfolk	29
	San Diego/Great Lakes/Norfolk	21
	San Diego/Memphis/Orlando	8
	San Diego/Memphis/Groton	8
	Other	34
		100

*This table contains data on only 50 of the 85 in the primary group. The remainder did not express a preference or were opposed to any centralization.

Survey results dealing with configurations and locations can be regarded to some extent as a popularity contest; i.e., respondents usually favored their own locations. However, there are objective considerations which may contribute to the information on which the selection of a particular site is based. The San Diego school is the largest of the instructor schools and is well situated to support the Pacific Fleet and west coast activities. The Memphis school is centrally located, convenient to the CNTECHTRA staff headquarters, and supports NATTC technical training activities. The Norfolk school, with an enrollment close to that of Memphis, supports Atlantic Fleet and east coast activities. The selection of a single school or two locations would depend in part on the economic impact discussed in section IV of this report.

STEPWISE REGRESSION ANALYSIS

The qualitative variables that related most highly with the respondents' judgments as to the desirability of consolidation of the instructor schools

are shown in table 9. The variables were identified via the stepwise regression technique, which were filtered out of the 45 or more variables as most meaningfully related to the judgment: "I am for/against consolidation." These variables are the ones to consider as most relevant in the determination of a consolidation decision policy. Each variable listed is also associated with a factor identification in the adjacent column. These factors are discussed in detail in the following paragraphs.

FACTOR ANALYSIS

The above analysis addressed numerous qualitative variables. Many of the variables were highly correlated, repetitive, and to some extent, redundant. It is virtually impossible for any manager faced with a centralization decision to simultaneously evaluate and weigh each variable considered above. He must draw into some coherent form the general factors and make a qualitative judgment as to how they would be impacted by centralization. To condense the above information into more significant and meaningful relationships, a "factor analysis" was performed using the 45 part I variables drawn from the qualitative questionnaire. From this analysis, six factors were extracted. Five of the six factors were meaningful and relatively easy to interpret. The remaining factor contained a great deal of spurious information and will not be considered in the following discussion. The five meaningful factors were identified as follows (see table 10):

I. Efficiency and Flexibility. The most important factor used to evaluate the perceived centralization proposals would be the effect of centralization on the efficiency and flexibility in the use of training resources. This factor was the first factor extracted from the analysis and explained more of the total variation than any other single factor. From the set of variables considered, those which were most significant in evaluating efficiency and flexibility are those which had relatively high loadings on this factor. Those variables are identified in table 10. The loadings shown for this and subsequent factors can be interpreted like correlation coefficients. The loading can be squared and multiplied by 100 to determine the percent of variation in that variable explained by the factor.

This analysis did not encompass all possible variables which may be important in making efficiency evaluations. Other variables not included on the qualitative questionnaire but which reflect efficiency and flexibility may be more germane for any given centralization decision. The important result from this analysis is that efficiency and flexibility in the use of resources are probably the most highly relevant considerations in the centralization decision. Managers must devise methods of assessing this factor and using the results in making their decisions.

TABLE 9. VARIABLES MOST RELEVANT IN DETERMINATION OF A CONSOLIDATION DECISION (BASED ON A STEPWISE REGRESSION ANALYSIS)

Dependent Variable (For or against)		
No.	Variable	Factor*
5	Evaluation Efficiency	I
45	Flexibility	-
12	Staff Size Required	III
18	Clerical Support Required	III
39	Utilization Efficiency (Equipment)	I
36	Operating Technician Requirement (Equipment)	III
4	Career Status	-
35	Quality (Equipment)	I
26	Revision Ease (Curriculum)	-
19	Scheduling Efficiency	II
21	Class Size Control	II
3	Specialization of Assignment	-
28	Innovation (Curriculum)	II
22	Student Test/Evaluation (Efficiency of)	I

*See table 10, Variables and Loadings Identified From Factor Analysis.

TABLE 10. VARIABLES AND LOADINGS IDENTIFIED FROM FACTOR ANALYSIS

FACTOR I. Efficiency and Flexibility

Variable	Loading
Utilization Efficiency (Eqpmt)	.689
Efficiency of Evaluation (Staff)	.681
Innovation Capability (Eqpmt)	.665
Inservice Training Activity	.657
Stability of Assignment	.655
Instructor Indoctrination Effic.	.637
Student Test/Eval. System Effic.	.632
Expansion Capability (Facility)	.622
One School (Academy)	.614
Selection Capability (Eqpmt)	.600
Quality of Equipment, Media, Aids	.599

FACTOR II. Management and Quality Control

Variable	Loading
Class Size Control	.888
Scheduling Efficiency	.885
Interservice Coordination	.867
Morale of Instructors	.863
New Course/Track Dev. Capability	.802
Ease of Task Analysis	.781
Feedback Implementation	.762
Rank and Experience Required	.751
Quality of Instructors	.749
Rank Structure Required	.748
Feedback Application	.746
Standardization Presentation	.734
Innovation (Curriculum)	.733

FACTOR III. Equipment and Personnel Requirements

Variable	Loading
Operating Technician Rqmt	.857
Maintenance Technician Rqmt	.847
Quantity Required (Eqpmt)	.798
Staff Size Required	.721
Clerical Support Required	.683

FACTOR IV. Location

Variable	Loading
Three School Locations	.692
San Diego	.619
Norfolk	.554

FACTOR V. Facility Availability

Variable	Loading
New Buildings	.693
Available Buildings	.682

II. Management and Quality Control. The second factor extracted included a set of variables dealing largely with the management of the instructional program. Included were variables which are used to monitor, control, and measure the quality of the instructional program. This factor implies the next major perceived impact of centralization would be in the management and quality control area. Management variables which would be affected by centralization would be class size, scheduling, interservice coordination, and course development. Quality control variables would include task analysis, feedback, instructor quality, and standardization of presentations. Other sections of this report identified how the respondents perceived that centralization would affect these variables. The set of variables extracted for this factor are shown in table 10.

III. Equipment and Personnel Requirements. Support requirements for personnel and equipment is one of the major factors which we viewed as being important in the centralization decision. This factor includes a set of variables dealing with measures on the perceived impact of equipment and support requirements. These variables are identified in table 10.

IV. Location. The fourth factor extracted dealt with the location of centralized schools. The three variables which loaded most heavily on this factor are those in which the respondents expressed a preference for the location and degree of centralization. The variables included in this factor are presented in table 10.

V. Facility Availability. The final factor to be considered dealt with the availability of facilities. The practical implementation of any consolidation plan requires that facilities be available and, according to this analysis, availability would be a key factor in the decision to consolidate. The two variables which loaded most heavily are shown in table 10.

Factors IV and V were the last factors extracted and, as such, were of relatively minor importance when compared to the first factors extracted. Nevertheless, they are perceived to be important, and managers must be cognizant of these factors when deciding whether or not to consolidate.

SUMMARY OF THE QUALITATIVE DATA ANALYSES

This section of the report (1) summarized the respondents' opinions regarding centralization, (2) identified those qualitative factors which were considered most affected by centralization, (3) identified those factors considered important in site selection, and (4) identified the locations and configurations preferred by the respondents.

A majority of the survey population (56 percent) who are currently assigned or closely associated with the instructor schools were in favor of centralization. However, those respondents who were familiar with the instructor school program through recent experience, but not currently involved, favored centralization by an even greater majority (71 percent). There were certain segments of the survey population who were either indifferent to centralization or very much opposed to the concept. The majority of individuals located at Groton, where the submarine school is located, were opposed to centralization. Most were of the opinion that the interaction between the school and operational units was desirable and centralization would reduce the ease with which such cooperation and interaction could occur. Officers in general were also opposed or indifferent to centralization but a high proportion of the officers in the survey were from Newport where a majority of the staff and students are officers.

Civilians, especially those in high level positions, were strongly in favor of centralization (86 percent). Most civilians believed that consolidation of the schools would have very beneficial effects. In general, the civilian personnel have a more permanent relationship with the instructor schools than their military counterparts and many of these individuals are specialists in the field of education and training. The majority (57 percent) of the enlisted personnel were also in favor of centralization but most did not believe the impact on efficiency, management, and quality would be significantly changed. Among respondents there was a high correlation between their estimate of the impact of centralization and their attitude toward centralization. With few exceptions, those who favored centralization were of the opinion that centralization would have very positive effects. Those who were indifferent to centralization simply believed that centralization would be neither harmful nor beneficial.

The questionnaire contained an extensive list of variables and factors which might be affected by centralization and which were hypothesized to be important to a centralization decision. Respondents rated the variables based upon their opinion as to how they would be impacted by centralization. Their responses were analyzed using objective techniques to summarize and isolate the more important qualitative effects of centralization. The analysis identified five major factors (or areas) which would be significantly affected by centralization. These five

factors are:

Efficiency and Flexibility. The most important effect of centralization would be from improvements realized in the use of resources and flexibility gained in the management of the training programs. With centralization, it would be much easier to make curriculum revisions, to develop more efficient and effective feedback procedures, and it would be less difficult to develop new courses, new instructional tracks, and implement self-paced individualized instructional programs.

Management and Quality Control. The majority of the respondents believed that it would be much easier to manage a more consolidated program and to develop and use methods to insure and maintain the training quality. Areas where such improvements would be anticipated include greater opportunity to use data processing equipment for maintenance of records, greater ease in developing interservice coordination and cooperative activities, and greater opportunity to develop management training programs. There would also be an improvement in the management and coordination of the instructor school training activities.

Equipment and Personnel Support. It was the opinion of most respondents that with centralization there would be greater opportunity to select training equipment that was highly adapted to the instructor training program. In addition it would be easier to justify the replacement of obsolete and worn-out equipment. Personnel support requirements would be reduced as efficiencies would be realized with changes in the scales of operations.

Location and Configuration Considerations. Among those factors important in selecting a site were the availability of housing and messing facilities and the proximity of the school to support facilities, to the technical schools, to research and development organizations, and to CNTECHTRA. Approximately half (48 percent) of those individuals in the sample who are currently involved with the instructor schools favored the three-school concept. However, 64 percent of those not currently involved, but familiar with the instructor training programs, favored the two-school concept.

For those who selected the two-school concept, most agreed that San Diego should be one of the sites. There was less agreement on where the second site should be located, but Memphis, Norfolk, and Orlando were the three most frequently mentioned sites. Those favoring three schools selected San Diego, Memphis, and Norfolk as the most preferred locations. The single-site plan was preferred by 28 percent of those currently involved with instructor training. However, of those individuals with recent experience (but who are not currently involved) none favored the single-site concept. For those who favored the single-site concept, the majority (79 percent) favored a Memphis location.

Facility Availability. The practical implementation of any consolidation plan requires that facilities be available and availability would be a key factor in the decision to consolidate.

SECTION IV

ECONOMIC ANALYSIS OF CENTRALIZATION ALTERNATIVES

This section of the report analyzes the costs associated with three alternative schemes for centralization. The costs of centralization options are being analyzed because as the size of an operation increases, scale economies (increases in output/unit of input) often occur and hence may affect the choice of centralization strategy. The effect on costs of scale economies can be illustrated by assuming that if the number of students was doubled, certain inputs would require less than doubling. Thus, with constant prices, economies of scale will cause output/unit of input to increase and average cost to decline.

Two factors which cause scale economies are input indivisibility and/or input specialization. Indivisibilities are defined as occurring when an input cannot be divided into small units so that it can be consumed in the exact amount required for a given output level; i.e., there is less than 100 percent utilization of the resource. For example, given a small average-on-board (AOB), classroom facilities may be used only part of the time and a full-time director may be unnecessary, yet both of these resources are required and must be acquired and used in integer units. Within certain limits, it is obvious that those resources which are underutilized because of indivisibility would not have to be increased for incremental increases in the student output. Therefore, given that other inputs are increased proportionately with prices constant, average costs would decrease over the span of any resource indivisibility.

Another factor which can generate economies of scale is input specialization. The larger the training system, the more easily the required tasks can be divided into homogeneous tasks. Capital and labor resources which can be employed for specific homogeneous tasks (specialization) usually result in enormous gains in productivity (output per unit input) because of (1) the development and refinement of specific skills, (2) the avoidance of wasted time in going from one job to another, and (3) the employment of resources for tasks for which they are best suited.

RESOURCE CATEGORIES

Four areas of resource expenditures--labor, equipment, transportation, and facilities--are analyzed to assess the scale economies and/or diseconomies arising from the centralization of the instructor schools. An earlier report (TAEG Report No. 17) showed that with constant student throughput, centralization would cause changes in the expenditure levels of the above four resource categories. Economies of scale from input specialization and/or indivisibility are most likely for labor and equipment, while transportation costs should reflect diseconomies of scale. An additional cost involved in these projected centralization

proposals is expendidutes for new facilities. The net effect of changes in these four categories will determine the economic efficiency of centralizing instructor training.

LABOR. Labor expenditures include the cost of instructors and staff of the instructor training schools. Labor costs per student should decrease with centralization because of (1) lower total overhead requirements for staff and (2) higher instructor utilization. Table 11 lists the man-hours of (instructor and staff) labor required by the present six-school system and the three proposed centralization plans. The figures given for the present system were based on an aggregation of the actual 1975 staff man-hours used at each of the six schools; that number was multiplied by a factor of 1.09 to adjust for a projected annual student input of 6785 versus an actual input of 6212.[6] The man-hours required for the one-, two-, and three-site configurations were compiled by Memphis instructor school personnel (see appendix D) given the annual input of 6785 and the course distribution of students shown by appendix E.

The total man-hours required for staffing instructor training systems decrease as the degree of centralization increases (table 11). The figures for the one-site system are invariant to the location; however, the two- and three-site systems both assume the status quo in San Diego (approximately half the student input of the entire system is in San Diego). Excluding San Diego, the staff man-hours for the other projected sites are invariant to site location.

The man-hour requirements for the two- and three-site systems are similar; however, there are big decreases in man-hour requirements between the present system and the three-site system and between the two-site and one-site centralization plans. The one-site plan requires approximately half the staff man-hours as the present system. The decline in staff requirements from input indivisibility and specialization can be seen by the decrease in directors and senior instructors from 25.5 man-years to 7, a decline of approximately 70 percent, and from the instructor requirements which decline from 109 man-years to 63, a 42 percent decrease.

Table 11 also shows the total labor costs for each system. These aggregates are derived from appendix F. Military labor costs were based upon current (September 1975) figures of the Navy Billet Cost Model; civilian labor costs were based on federal civil service pay scales. Average time-in-grade was assumed for each civilian and military staff member. The differences in labor requirements shown by the man-hour

[6] Student input was assumed to be at the 1976 TOP level of 6785 for each of the four systems analyzed.

TABLE 11. STAFF REQUIREMENTS FOR PRESENT AND PROPOSED INSTRUCTOR TRAINING SYSTEMS GIVEN A STUDENT INPUT OF 6785 (MAN-YEARS)

	PRESENT SYSTEM	THREE SITES	TWO SITES	ONE SITE
Director	7.5	6	5	3
Senior Instructor	18.0	12	10	4
Instructors	109.0	76	71	63
Secretary	13.0	8	8	5
Other	7.0	6	6	4
TOTAL	154.5	108	100	79
Annual Cost*	$4,004,000	$2,880,000	$2,729,000	$2,116,000

* See Appendix F for breakdown.

data are also reflected by the differences in the expenditures for labor. These expenditures were $4,004,000 annually for the present system but would be only $2,116,000 for a single school. Centralization could have scale economies if these labor cost reductions are not totally offset by cost increases in the other three inputs--equipment, facilities, and transportation.

EQUIPMENT. Currently, instructor training classes use mostly traditional classroom equipment with some audio-visual equipment.[7] It is assumed that centralization will not change the type of equipment used in instructor training; however, the utilization of that equipment may increase, thus leading to a reduction in average costs. Appendix E (pages 88-91) demonstrates the direct relationship between centralization and utilization. Equipment requirements are directly related to the quantity of classrooms. If rooms are utilized more with centralization, it necessarily follows that the equipment in the room will also be used more. Thus, the more centralized the system, the greater the decrease in cost of equipment per student. However, based upon provided estimates, the cost reduction in equipment is so slight (relative to total costs) that the assumption is made that total equipment requirements are invariant to the degree of centralization. Thus, each system has the same annual equipment costs; the initial equipment costs of the three centralization schemes differ however because each involves different size new classroom buildings and different use of existing equipment. For example, the two- and three-site plans assume the status quo (use of existing facilities and equipment) at San Diego while the one-site plan would require almost all new equipment.[8]

TRANSPORTATION. Under the present six instructor training school system, almost half of the students at each instructor training school came from technical training courses at the same location as the instructor school and a majority of the students remained there as instructors.[9] With centralization, however, some of the instructor training schools would be closed, thereby increasing the number of students traveling to and from school. One would expect, therefore, that transportation costs would increase as the degree of centralization increases.

[7] Equipment includes chalkboards, chairs, tables, 16 mm projectors, overhead projectors, slide projectors, filmstrip projectors, screens, VTRs, video playback units, cameras, tape recorders, lecterns, and stools.

[8] The percent new equipment would depend on the location; i.e., there is more existing equipment at San Diego than Memphis.

[9] From an origin and destination survey of each school.

The transportation costs presented here are based on a student origin and destination questionnaire (see appendix C) sent to each instructor school. With a student input of 6785, the annual transportation costs of the present system would be $356,000, while transportation for three schools (San Diego, Memphis, Norfolk) would require $397,000 (see table 12).[10] Consolidating to two locations (San Diego and Memphis) would further increase transportation costs to $541,000 annually.[11] A single-site located at Memphis would cost $1,265,000 annually for transportation, about four times the cost of the present system. The transportation costs of students in the one-site system given above are, for the most part, invariant to the location of the school because students are distributed fairly evenly throughout the country. This increase in transportation costs due to centralization (scale diseconomies) will offset some of the labor cost reductions (scale economies).

FACILITIES.[12] In order to consolidate instructor training into fewer than six sites, new facilities must be built or existing ones must be renovated. The latter option could indirectly involve new construction if the present occupants require new facilities because of the lack of any surplus facilities. Facilities, whether classroom, BEQ, or dining, incur two types of time-defined costs--initial and annual (see table 12). The initial facility costs are those costs on buildings which must be incurred to implement a system; they are nonrecurring. Initial costs include the costs to build new facilities or to renovate existing structures. This study assumes that proposed centralization systems will require new buildings (classroom and BEQ). Existing facilities at each location considered are inadequate to handle the increased student throughput from consolidation (see appendix E, pages 98-99). The existing system has no initial costs as buildings are already available.

Annual, or recurring, facility costs include operation and maintenance costs for new buildings and the opportunity cost of existing facilities. It is assumed that annual operating and maintenance costs of new facilities

[10] The latter figure assumes that all students now going to Great Lakes would transfer to Memphis; Groton and Newport students would go to Norfolk; and San Diego would remain unchanged. A transportation cost minimizing distribution system was not assumed because it was considered unrealistic as there are factors other than transportation cost which can determine the distribution of students to instructor training schools.

[11] The five eastern schools would be consolidated at Memphis.

[12] Appendices D and E concern facility data. Appendix D details modification of building S-750 in Memphis given different centralization options (it also lists staff requirements); appendix E, however, develops new construction requirements.

TABLE 12. PROJECTED 5-YEAR COSTS FOR PROPOSED AND THE EXISTING INSTRUCTOR TRAINING SYSTEM
(6785 ANNUAL STUDENT INPUT)
CONSTANT (FY 1976) DOLLARS

	INITIAL OUTLAY	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	REMAINING VALUE OF CAPITAL STOCK
Facilities*							
One Site	$6,880,000	$ 69,000	$ 69,000	$ 69,000	$ 69,000	$ 69,000	$5,160,000
Two Sites	3,937,000	95,000**	95,000	95,000	95,000	95,000	2,953,000
Three Sites	5,079,000	106,000**	106,000	106,000	106,000	106,000	3,810,000
Present System	0	214,000	214,000	214,000	214,000	214,000	0
Equipment							
One Site	68,000	9,000	9,000	9,000	9,000	9,000	34,000
Two Sites	30,000	9,000	9,000	9,000	9,000	9,000	15,000
Three Sites	32,000	9,000	9,000	9,000	9,000	9,000	16,000
Present System	0	9,000	9,000	9,000	9,000	9,000	0
Transportation							
One Site	0	1,265,000	1,265,000	1,265,000	1,265,000	1,265,000	0
Two Sites	0	541,000	541,000	541,000	541,000	541,000	0
Three Sites	0	397,000	397,000	397,000	397,000	397,000	0
Present System	0	356,000	356,000	356,000	356,000	356,000	0
Personnel							
One Site	0	2,116,000	2,116,000	2,116,000	2,116,000	2,116,000	0
Two Sites	0	2,729,000	2,729,000	2,729,000	2,729,000	2,729,000	0
Three Sites	0	2,880,000	2,880,000	2,880,000	2,880,000	2,880,000	0
Present System	0	4,004,000	4,004,000	4,004,000	4,004,000	4,004,000	0
TOTAL							
One Site	6,948,000	3,459,000	3,459,000	3,459,000	3,459,000	3,459,000	5,194,000
Two Sites	3,967,000	3,374,000	3,374,000	3,374,000	3,374,000	3,374,000	2,968,000
Three Sites	5,111,000	3,392,000	3,392,000	3,392,000	3,392,000	3,392,000	3,826,000
Present System	0	4,583,000	4,583,000	4,583,000	4,583,000	4,583,000	0

* Includes classroom & billeting. Two and Three Sites use existing facilities in San Diego.
** Includes operation and maintenance costs at San Diego.

amount to one percent of the initial outlay for said facility. With existing facilities, the annual cost to keep the services of capital flowing (expenses to keep facilities in operating condition) is assumed to be equal to what the government could have received from the private sector if these facilities were rented--approximately $5.50/sq. ft. Thus, the total opportunity cost of existing facilities is a function of their square footage; this "cost" ranged from a high of approximately $55,000/yr for San Diego to a low of $5,000/yr for both Newport and Groton's facilities.[13]

If the assumption were made to renovate present facilities, an existing building would have to be designated. This was done with building S-750, the instructor training facility at Memphis (see appendix D). Renovation costs for this building were based on projected AOB given one-, two-, and three-site configurations.

The renovation costs, however, were not the only costs to be considered because some noninstructor training occupants of S-750 would have to be relocated to free the additional space required for the increased instructor training school. At this particular site, relocation such as this would necessitate new construction as there are no suitable classroom facilities which could be employed by the relocated people (see appendix D). Thus, given consolidation at Memphis, present indications are that new facilities will be required whether for an instructor training school or for relocated occupants of the present facilities.

PRESENT COST ANALYSIS

Given the previous discussions and assumptions, table 12 lists the facilities, equipment, transportation, and personnel costs for the three proposed centralization schemes and the present system; these figures are in constant (FY 1976) dollars over the 5-year planning period. The remaining value of the capital stock (asset) is calculated by dividing the initial outlay by the economic life of the asset, 10 years for equipment and 20 for facilities. This figure is then multiplied by the number of years in the planning period; the resulting number represents that part of the asset which has been consumed and it is subtracted from the asset's original value to give the remaining value of the asset. For example, the initial outlay for facilities under a one-school option is $6,880,000. Assuming a 20-year life, the annual consumption, or flow of services, of the asset is $344,000. Therefore, after 5 years of use, $1,720,000 of services have been consumed from facilities; this leaves a remaining value of $5,160,000.

[13] While these estimates are rather crude, their impact is so small as to have minimal effect on the total costs involved.

TABLE 13. PRESENT COST OF PROPOSED AND EXISTING INSTRUCTOR TRAINING SYSTEM
(GIVEN 5-YEAR PLANNING PERIOD)

	1 Initial Outlay	2 Discounted Annual Costs	3 Discounted Asset Value	Present Cost (1 + 2 - 3)
One Site	$6,948,000	$13,760,000	$3,386,000	$17,322,000
Two Sites	3,967,000	13,422,000	1,935,000	15,454,000
Three Sites	5,111,000	13,494,000	2,495,000	16,110,000
Existing	0	18,230,000	0	18,230,000

The initial outlays for facilities were estimated by the NAVFACENGCOM, Southern Division (see appendix E, page 97). The annual cost of facilities for the two- and three-site options, listed in table 12, includes both operation and maintenance for new facilities and the opportunity cost of the present San Diego facilities.

The annual equipment costs are based upon the assumption that 10 percent of the equipment would have to be replaced every year (10-year economic life). Thus, with a total value of approximately $90,000 (new and available), the annual equipment cost would be $9000.

Economies and diseconomies of scale are reflected in personnel and transportation cost figures, respectively. The present annual transportation cost for a student throughput of 6785 is approximately $356,000. As the degree of centralization increases, the cost of transportation increases to a high of $1,265,000 annually for a one-site consolidation.[14] Personnel expenditures, on the other hand, decrease as the degree of centralization increases. The present system, given a student throughput of 6785, would necessitate personnel expenditures of approximately $4,004,000 whereas a single-site system would have annual personnel costs of only $2,116,000. From table 12 it is apparent that the decrease in personnel costs more than offsets any increase in transportation costs. The total annual personnel costs of the one-, two-, and three-site systems are relatively close, whereas the present six-school system has annual personnel costs of approximately $1,000,000 more than the highest of the centralization alternatives. The present system, however, requires no new facilities. Therefore, the problem to solve is whether the annual cost savings of the centralization systems are offset by their need for new construction, given a 5-year planning period. The present cost model introduced earlier enables the initial and annual costs to be transformed into a constant (FY 1976) dollars discounted value; the results of this are shown in table 13 using the figures from table 12.

The two-site centralization scheme would have the lowest present cost, while the present system would have the highest present cost. These results occur because the two-site system has considerable savings in personnel expenditures while not incurring high transportation costs (as the one-site system) or high building costs (as the one- and three-site systems). The present system, however, has such large personnel costs, compared to any of the three consolidation plans, as to insure some savings via centralization.

[14] This assumes a Memphis location; however, transportation costs should be relatively invariant of location.

The above has been based on the assumption that new facilities would be required to implement any of the three centralization schemes. Of course, if unused existing facilities were available, then centralization would become even more economical. Any existing facilities that could be used by a centralized school, however, are not unused buildings but rather are occupied. This happens to be the case currently at Memphis (see appendix D). The present Memphis school is located in building S-750 and because this building is new, renovation costs would be minimal. The noninstructor training school occupants of S-750, however, would have to be relocated and this would require new facilities (see appendix D), thus eliminating any potential saving. Given the list of excess buildings in appendix E, the above renovation and relocation problem would be the rule rather than the exception regardless of location.

In addition to changes in labor and transportation expenditures, facility outlays must be taken into account when considering centralization. Given the list of available facilities (see appendix E, pages 98 and 99), new construction will be required for any centralization proposed. The construction would constitute a classroom building, BEQ, and a dining facility; the size of these buildings would be a function of the student input. The annual cost, which is composed of operation and maintenance of these facilities, is not significant when compared to the initial outlays for the buildings.

Therefore, in addition to the annual costs of the three resource expenditure categories, the initial cost of facilities and their asset value over time must be considered. This was done in a present cost model which looked at costs over 5 years. The present cost of the two-site system was the lowest, $15,454,000, while the present system had the highest present cost, $18,230,000.

SUMMARY OF ECONOMIC ANALYSIS

From the analysis of the resource expenditure categories, there are three categories of expenditures which change as the degree of centralization changes. These categories are labor, transportation, and facilities expenditures; and their aggregated effect determines the economic viability of any centralization scheme.

The expenditures on labor (instructor and staff) decrease as the degree of centralization increases. These increasing returns to labor are mainly caused by the input indivisibility of labor in the present six-school system. The annual labor cost of the present system is estimated at $4,004,000 while a single-site option with the same student input would require labor expenditures of only $2,116,000.

The scale economies shown by labor are partially offset by the diseconomies characterized by transportation costs. As the degree of centralization increases (the number of schools decreases), more students

have to travel--and travel greater distances. Thus, it is inevitable that transportation costs will increase. The present six-school system has an annual transportation bill of approximately $356,000 while a single-site concept would require approximately $1,265,000 for transportation (relatively invariant to location).

In addition to changes in labor and transportation expenditures, facility outlays must be taken into account when considering centralization. When these costs are included, the two-site configuration has the lowest present cost while the present system has the highest. The initial outlays for facilities are the greatest for the one-site plan, $6,880,000. The annual facilities costs, however, are greatest for the present system, $214,000.

Combining all the resource expenditures into a 5-year present cost model, the two-site system was found to be the most economically efficient alternative. The present cost of this alternative was estimated at $15,454,000, while the present cost of the present system was the highest, $18,230,000.

SECTION V

CONCLUSIONS

The majority of respondents exhibited a good deal of sentiment for some degree of centralization, and an economic analysis demonstrated that savings would result from consolidating the instructor training schools.

The greatest cost savings from centralization would result from reductions in the number of the instructor training staff. The most important offset to these cost reductions would be increased student transportation costs. Nevertheless, with all cost changes considered, the net effect is a savings from centralization. The estimated savings from consolidating all schools to a single site is $0.9 million over a 5-year period. Savings from consolidating to two sites were estimated to be $2.8 million and savings from consolidating to three sites were estimated at $2.1 million. These savings are based upon the assumption that wherever the centralized school is located, new facilities must be constructed. If facilities must be constructed, then schools could not be immediately consolidated because of the time lag required for obtaining funds and construction.

Many of the advantages and disadvantages of a centralized instructor school cannot be quantified and evaluated within the framework of a cost analysis. Judgments on the desirability and feasibility of centralization must encompass an evaluation of the qualitative effects. This study surveyed the opinions of those involved with or affected by instructor training to determine their assessment of the noncost effects of centralization.

Most respondents indicated that some real benefits would result from centralization. The most important benefits would arise from improvements in the efficiency and use of resources allocated to the instructor training program. Other benefits would include (1) improvements in the ease with which the curriculum could be improved or revised, (2) the development and use of more standardized presentation techniques, (3) improvements in interservice cooperation, (4) more efficient and effective use of feedback information, (5) a greater capability to develop new course/tracks to keep pace with a changing technology, (6) closer and more frequent interaction between school administrators, TPCs, the CNTECHTRA staff, and the "schoolhouse," (7) improvements in scheduling, (8) greater opportunity to adapt the instructional program to the divergent needs and capabilities of the students, and (9) greater opportunity for identifying and adopting new technology and equipment.

Not all respondents agreed that centralization would be primarily beneficial. Perhaps the most serious disadvantage perceived by the survey respondents involves the separation of the instructor training

schools from the technical training schools. It was alleged that centralization would eliminate opportunities for mutually beneficial interaction between instructor schools, technical schools, and operational units (e.g., the submarine activities at Groton).

Other disadvantages included an increase in the travel time to and from school and a reduction in the ability of the school to adapt and change the training as circumstances warrant. Several respondents expressed the opinion that centralization would cause costs to increase. Although the economic analysis of this study did show that transportation costs would increase, the net effect would be a reduction in total costs because of greater savings in other areas.

Nearly half of the primary respondents who were constantly associated with instructor schools favored three school sites, and there was general agreement that one of the locations should be San Diego. There was less agreement as to where the other schools should be located although the most frequently mentioned sites were Memphis, Norfolk, and Orlando. For those who favored a single site, Memphis was the most frequently mentioned location preference.

Individuals in the comparison survey group who are familiar with but not currently associated with the instructor schools preferred the two-site concept. It is assumed that these individuals would tend to be more objective in their assessment because they would not be significantly affected by consolidation.

It is concluded that the implementation of centralization of the CNTECHTRA instructor training schools in some form would produce both a cost and a qualitative improvement over the present six-school system.

The decision as to whether such centralization should be accomplished with a single-site, two-site, or three-site school system may be guided by the following considerations:

- The results of economic analysis favor the establishment of a two-school system, in which the San Diego school retains its present training load, and the five eastern schools are consolidated at an eastern location, either Memphis, Norfolk, or Great Lakes. However, it should be noted that the three-school option closely follows in economic advantages.

- The qualitative survey supported the three-school system, without regard to cost factors. This represented the opinion of the majority of respondees, without reference to specific advantages.

In general, Memphis, San Diego, and Norfolk appear to be primary candidates for the locations of the centralized schools.

In the opinion of the TAEG study team certain advantages may accrue from selection of a single site, or "academy"; e.g., increased prestige and professionalism of Navy instructor training school staff and graduates, an improved environment for education and training research and innovation, and an appropriate center for interservice coordination. Location of an academy at a west coast, central, or east coast site would be relatively equal in cost.

APPENDIX A

SUMMARY OF QUALITATIVE QUESTIONNAIRE RESPONSE DATA: PRIMARY GROUP

TRAINING ANALYSIS AND EVALUATION GROUP
ORLANDO, FLORIDA

QUESTIONNAIRE

CENTRALIZED INSTRUCTOR TRAINING FOR NAVAL TECHNICAL TRAINING
TAEG PROJECT WA-1046

BACKGROUND: Under Project 1046, TAEG is studying all factors involved in the centralizing or consolidating the six CNTECHTRA controlled Instructor Schools (Memphis, San Diego, Great Lakes, Norfolk, Groton, and Newport) into fewer locations. This is a follow-up of a completed TAEG Report #17, "Instructor Training", which included a cost analysis of the theoretical combining of the five east coast schools into one location (Memphis) and retaining the west coast school, San Diego, as is. The current study will expand on the Report #17 cost study, and in addition, look into qualitative as well as quantitative (cost) factors of several combinations of schools; specifically, a one location (academy) as well as a two and a three location concept. This study considers only the feasibility of the various options for planning purposes, and does not imply the implementation by CNET of any of the alternatives. Personnel, like you, most knowledgeable in the field of instructor training are requested to complete this questionnaire related to qualitative variables. Quantitative (cost) factors are the subject of separate questionnaires and will be administered separately.

I. What effect would centralization or consolidation of the six CNTECHTRA Instructor Training Schools have on the following variables?

(Check (✓) One Column)

	MAJOR DECREASE -3	MODERATE DECREASE -2	SLIGHT DECREASE -1	NO EFFECT 0	SLIGHT INCREASE 1	MODERATE INCREASE 2	MAJOR INCREASE 3	MEAN	STD DEV
- INSTRUCTOR STAFF VARIABLES									
1. Quality of Instructors: (The overall attributes, traits, or characteristics that you believe are factors distinguishing good instructors from poor ones.)	1	9	8	38	11	5	13	.4	1.5
2. Stability of Assignment: (The length of time a staff instructor stays on the job, including second tour.)	1	4	5	58	8	8	1	.1	1.0
3. Specialization of Assignment: (The capability to assign instructors into areas of special proficiency or school need.)	2	3	6	29	14	21	10	.8	1.4
4. Career Status: (Effect of assignment on promotion eligibility and career benefits.)	1	4	4	53	10	10	3	.3	1.1
5. Evaluation, Efficiency of: (Accuracy and effectiveness of the Quarterly Evaluation of Instructors (including the evaluation by local supervisors)).	2	3	8	42	15	10	5	.4	1.2
6. Instructor Indoctrination Efficiency: (The process of orientation and familiarization for new instructors.)	6	3	13	29	15	10	9	.3	1.6
7. Inservice Training Activity: (Organization, improvement, and expansion of continuing training for instructor staff.)	2	4	10	20	24	11	14	.8	1.5
8. Rank Structure Required: (The average grade/rate/rank of staff personnel.)	1	2	6	51	13	6	6	.4	1.1
9. Use of Civilian Instructors:	9	7	4	45	11	5	4	-.1	1.4
10. Use of Military Instructors:	0	4	11	45	10	8	7	.3	1.2

I. What effect would centralization or consolidation of the six CNTECHTRA Instructor Training Schools have on the following variables? (continued)	(Check (/) One Column) MAJOR DECREASE -3	MODERATE DECREASE -2	SLIGHT DECREASE -1	NO EFFECT 0	SLIGHT INCREASE 1	MODERATE INCREASE 2	MAJOR INCREASE 3	MEAN	STD DEV
- INSTRUCTOR STAFF VARIBLES (continued)									
11. Morale of Instructors: (The zeal, determination, devotion to duty, perseverance and other factors making up the staff's overall mental state.)	8	9	19	25	11	8	5	-.2	1.6
- SCHOOL MANAGEMENT VARIABLES									
12. Staff Size Required: (The quantity of Directors, Training Officers, Instructors and Supervisors.)	5	14	24	14	13	9	6	-.2	1.6
13. Rank and Experience Required: (The prerequisites and requirements necessary to join the staff (in areas of rank, pay grade, and time on previous jobs.))	0	3	6	46	16	14	0	.4	1.0
14. Professional Qualifications Required: (The prior formal education and training required for the management staff.)	0	1	0	45	22	11	6	.7	1.0
15. Interservice Coordination: (The communication of ideas or curriculum exchange with other military services.)	0	0	2	25	18	22	18	1.3	1.2
16. Records, Automation of: (Automation or computerization of record keeping for student and staff in all areas of grades, scheduling or classes.)	0	1	4	20	20	22	18	1.3	1.2
17. Managerial Efficiency: (The efficiency of overall daily management tasks.)	0	4	8	26	16	17	14	.9	1.4
18. Clerical Support Requirement: (The total numbers of typists, stenographers and clerks.)	6	12	17	18	15	13	4	-.1	1.6
- ADMINISTRATION VARIABLES									
19. Scheduling Efficiency: (The preparation efficiency of student and staff schedules, to insure continuous activity.)	2	3	4	24	23	17	12	.9	1.4
20. Ability Grouping Capability: (The capability to group students by experience, mental level, motivation or other factors.)	0	2	3	33	22	10	15	.9	1.2
21. Class Size Control: (Control, stabilization and prediction of student class size for maximum learning.)	3	7	1	30	20	14	10	.6	1.5
22. Student Test and Evaluation System, efficiency of: (The construction, administration, evaluation, and analysis of tests.)	2	1	2	38	7	25	10	.9	1.3
23. Standardized Presentation: (The standerdization of presentation techniques used by staff to present lessons.)	0	1	2	22	18	19	23	1.4	1.3
24. Feedback Implementation: (The capability to utilize formal feedback procedures to determine if graduates in the field have been taught information and skills that will allow them to perform effectively on the job.)	2	2	7	27	17	14	16	.9	1.5

I. What effect would centralization or consolidation of the six CNTECHTRA Instructor Training Schools have on the following variables? (continued)	(Check (✓) One Column) MAJOR DECREASE -3	MODERATE DECREASE -2	SLIGHT DECREASE -1	NO EFFECT 0	SLIGHT INCREASE 1	MODERATE INCREASE 2	MAJOR INCREASE 3	MEAN	STD DEV
- CURRICULUM VARIABLES									
25. Management-TPC Review Frequency: (The frequency of Program Coordinator (TPC) review of the schools curriculum; by correspondence and by personal visit.)	0	5	5	21	27	12	15	1.0	1.4
26. Revision, Ease of: (Simplicity of timely changes, additions, deletions, and improvements to the curriculum.)	4	3	2	8	20	16	32	1.5	1.6
27. Feedback Application: (Simplicity of updating the curriculum based on feedback inputs from previous graduates and other sources.)	2	3	6	17	20	10	28	1.3	1.5
28. Innovation: (The number of new ideas, experiments, and one-of-a-kind efforts to improve the curriculum.)	5	6	9	10	23	14	18	.8	1.8
29. Task Analysis, Ease of: (The simplicity of the task of analyzing job performance and designing/developing training to meet job requirements consisting of Job Task Analysis and Training Task Analysis processes.)	1	2	8	29	23	15	7	.7	1.2
30. Criterion - Referenced Measurement Effectiveness: (Effectiveness of the pass/fail system of grading as opposed to norm-referenced measurement.)	0	2	4	53	11	8	7	.5	1.1
31. New Course/Track Development Capability: (Development of new courses or tracks to be taught by the Instructor School Staff.)	1	1	5	22	26	15	15	1.1	1.3
32. Special Requirements: (Anything under the heading of curriculum not listed previously that would be effected by centralization.) (State)	2	2	0	67	8	4	2	.1	.9
33. Self-Paced Instruction Development Capability: (Capacity for more courses or phases to be considered for development in sequence and format that allows each student to progress at a rate commensurate with his ability.)	0	1	2	34	23	14	11	.9	1.1
- EQUIPMENT, MEDIA, AIDS VARIABLES									
34. Quantity, Required: (The total amount necessary to operate the Instructor Schools.)	6	15	25	21	9	5	4	-.5	1.5
35. Quality: (The attributes, properties, or characteristics of the equipment considered good.)	0	2	1	41	21	11	9	.8	1.1
36. Operating Technician Requirement: (The number of personnel needed to operate the equipment (e.g., TV, projectors).)	3	9	23	30	14	4	2	-.3	1.2
37. Maintenance Technician Requirement: (The number of personnel needed to maintain the equipment.)	4	13	21	23	16	6	2	-.3	1.4
38. Innovation Capability: (Capability of the staff to originate, design and construct new/novel equipment.)	1	1	4	32	25	12	10	.8	1.2
39. Utilization Efficiency: (Use of the above equipment more efficiently in a training situation.)	0	1	3	28	21	18	14	1.1	1.2
40. Selection Capability: (Capability of the staff to more accurately select the proper equipment for the curriculum.)	0	0	1	37	20	8	19	1.1	1.2

I. What effect would centralization or consolidation of the six CNTECHTRA Instructor Training Schools have on the following variables? (continued)	(Check (✓) One Column) MAJOR DECREASE -3	MODERATE DECREASE -2	SLIGHT DECREASE -1	NO EFFECT 0	SLIGHT INCREASE 1	MODERATE INCREASE 2	MAJOR INCREASE 3	MEAN	STD DEV
- EQUIPMENT, MEDIA, AIDS VARIABLES (continued)									
41. Modernization Capability: (The ability to keep equipment updated.)	0	0	1	25	25	19	15	1.3	1.1
- OTHER VARIABLES									
42. Contractor Training: (The possibility of using an outside civilian contractor to teach under Navy administration.)	15	4	0	33	16	10	7	0	1.8
43. Unique Training Situations: (The ability to cope with unique situations; such as students at Newport being predominantly officers, or students at Groton being predominantly in submarine service.	15	5	7	32	15	6	5	-.2	1.7
44. Expansion Capability: (The ability to enlarge the school to meet future requirements.)	2	1	7	23	28	13	11	.8	1.3
45. Flexibility: (The capability to deal with fluctuations in student input.)	3	6	8	21	21	11	15	.7	1.6

II. Assuming the decision was made to centralize (consolidate) the six schools, what effect would the following factors have on your choice of locations?

	(Check (✓) One Column) NONE 0	SLIGHT 1	MODERATE 2	MAJOR 3	KEY FACTOR 4			MEAN	STD DEV
1. Climate: (The general atmospheric and weather conditions.)	36	10	17	12	10			1.4	1.4
2. Available Buildings: (Availability of a ready built, ready for occupancy building.)	15	10	13	26	21			2.3	1.4
3. New Buildings: (The requirements for a new building to be constructed primarily for the Instructor School.)	11	14	10	15	35			2.6	1.5
4. R and D Facility: (The proximity of a Research and Development Facility, such as NPRDC (Naval Personnel Research and Development Center) provides services to a centralized school.)	20	23	23	10	9			1.6	1.3
5. CNTECHTRA: (The proximity of CNTECHTRA to a centralized school.)	36	16	10	16	8			1.4	1.4
6. Support Facility: (The proximity of a centralized school to a print shop, training aids shop, art shop and other support units.)	10	11	17	29	18			2.4	1.3
7. Tech Schools: (The proximity of Class A, C and other technical training schools to a centralized school.)	23	16	16	18	12			1.8	1.4
8. Housing and Messing Facilities: (The requirement for support of staff, students, and dependents.)	7	3	9	35	31			2.9	1.2

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III. All factors and variables above considered, what is your overall opinion concerning centralization or consolidation of the six schools into fewer locations? (Check one or more)

A. Strongly recommended 22

B. Appears worthy of cost and qualitative analysis 23

C. A good idea, but there is no urgency 10

D. No improvement over the present system 14

E. A poor idea, not as good as present system 7

F. A very poor idea with serious disadvantages 9

Mean 2.9
STD Dev 1.7

IV. In your opinion, what is the most desirable configuration for location of instructor training schools?

A. One East Coast and one West Coast School 15

B. One East Coast, one West Coast and one Central School 30

C. One academy, combining all six schools 18

D. Other or none 22

Best location (base(s)) for your choice of above (1) Memphis 17 (2) San Diego 19 (3) Norfolk 8

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V. What is the main reason for your opinion for or against centralization? (Circle one and explain) FOR 48 AGAINST 37

COMMENTS:

(Continue comments on back, or attach sheets if desired.)

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APPENDIX B

SUMMARY OF QUALITATIVE QUESTIONNAIRE RESPONSE DATA: COMPARISON GROUP

TRAINING ANALYSIS AND EVALUATION GROUP
ORLANDO, FLORIDA

QUESTIONNAIRE

CENTRALIZED INSTRUCTOR TRAINING FOR NAVAL TECHNICAL TRAINING
TAEG PROJECT WA-1046

BACKGROUND: Under Project 1046, TAEG is studying all factors involved in the centralizing or consolidating the six CNTECHTRA controlled Instructor Schools (Memphis, San Diego, Great Lakes, Norfolk, Groton, and Newport) into fewer locations. This is a follow-up of a completed TAEG Report #17, "Instructor Training", which included a cost analysis of the theoretical combining of the five east coast schools into one location (Memphis) and retaining the west coast school, San Diego, as is. The current study will expand on the Report #17 cost study, and in addition, look into qualitative as well as quantitative (cost) factors of several combinations of schools; specifically, a one location (academy) as well as a two and a three location concept. This study considers only the feasibility of the various options for planning purposes, and does not imply the implementation by CNET of any of the alternatives. Personnel, like you, most knowledgeable in the field of instructor training are requested to complete this questionnaire related to qualitative variables. Quantitative (cost) factors are the subject of separate questionnaires and will be administered separately.

I. What effect would centralization or consolidation of the six CNTECHTRA Instructor Training Schools have on the following variables?

(Check (✓) One Column)

	MAJOR DECREASE -3	MODERATE DECREASE -2	SLIGHT DECREASE -1	NO EFFECT 0	SLIGHT INCREASE 1	MODERATE INCREASE 2	MAJOR INCREASE 3	MEAN	STD DEV
- INSTRUCTOR STAFF VARIABLES									
1. Quality of Instructors: (The overall attributes, traits, or characteristics that you believe are factors distinguishing good instructors from poor ones.)	1	4	2	16	2	1	0	-.3	1.1
2. Stability of Assignment: (The length of time a staff instructor stays on the job, including second tour.)	0	2	1	18	4	1	0	0	.8
3. Specialization of Assignment: (The capability to assign instructors into areas of special proficiency or school need.)	0	2	2	10	4	6	2	.6	1.3
4. Career Status: (Effect of assignment on promotion eligibility and career benefits.)	1	0	2	20	3	0	0	-.1	.7
5. Evaluation, Efficiency of: (Accuracy and effectiveness of the Quarterly Evaluation of Instructors (including the evaluation by local supervisors)).	1	1	2	15	1	4	2	.3	1.4
6. Instructor Indoctrination Efficiency: (The process of orientation and familiarization for new instructors.)	0	2	4	9	5	3	3	.5	1.4
7. Inservice Training Activity: (Organization, improvement, and expansion of continuing training for instructor staff.)	2	2	0	12	7	2	1	.2	1.4
8. Rank Structure Required: (The average grade/rate/rank of staff personnel.)	0	0	0	21	5	0	0	.2	.4
9. Use of Civilian Instructors:	3	1	3	8	3	4	4	.3	1.8
10. Use of Military Instructors:	5	3	3	11	1	2	1	-.6	1.6

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I. What effect would centralization or consolidation of the six CNTECHTRA Instructor Training Schools have on the following variables? (continued)	(Check (/) One Column)								
	-3 MAJOR DECREASE	-2 MODERATE DECREASE	-1 SLIGHT DECREASE	0 NO EFFECT	+1 SLIGHT INCREASE	+2 MODERATE INCREASE	+3 MAJOR INCREASE	MEAN	STD DEV
- INSTRUCTOR STAFF VARIBLES (continued)									
11. Morale of Instructors: (The zeal, determination, devotion to duty, perseverance and other factors making up the staff's overall mental state.)	2	4	3	13	4	0	0	-.5	1.2
- SCHOOL MANAGEMENT VARIABLES									
12. Staff Size Required: (The quantity of Directors, Training Officers, Instructors and Supervisors.)	4	5	5	8	1	2	1	-.7	1.6
13. Rank and Experience Required: (The prerequisites and requirements necessary to join the staff (in areas of rank, pay grade, and time on previous jobs.))	0	0	0	19	4	2	1	.4	.8
14. Professional Qualifications Required: (The prior formal education and training required for the management staff.)	0	0	1	18	4	2	1	.4	.8
15. Interservice Coordination: (The communication of ideas or curriculum exchange with other military services.)	0	1	0	11	9	2	3	.8	1.1
16. Records, Automation of: (Automation or computerization of record keeping for student and staff in all areas of grades, scheduling or classes.)	1	3	1	5	3	8	5	.9	1.8
17. Managerial Efficiency: (The efficiency of overall daily management tasks.)	1	0	0	7	9	6	3	1.0	1.3
18. Clerical Support Requirement: (The total numbers of typists, stenographers and clerks.)	4	3	5	6	2	4	1	-.3	1.8
- ADMINISTRATION VARIABLES									
19. Scheduling Efficiency: (The preparation efficiency of student and staff schedules, to insure continuous activity.)	0	1	1	10	8	2	4	.8	1.2
20. Ability Grouping Capability: (The capability to group students by experience, mental level, motivation or other factors.)	0	0	2	12	6	4	2	.7	1.1
21. Class Size Control: (Control, stabilization and prediction of student class size for maximum learning.)	0	0	2	13	6	2	3	.7	1.1
22. Student Test and Evaluation System, efficiency of: (The construction, administration, evaluation, and analysis of tests.)	0	2	1	7	10	5	1	.7	1.2
23. Standardized Presentation: (The standardization of presentation techniques used by staff to present lessons.)	0	1	0	7	7	6	5	1.2	1.2
24. Feedback Implementation: (The capability to utilize formal feedback procedures to determine if graduates in the field have been taught information and skills that will allow them to perform effectively on the job.)	0	1	0	7	8	6	4	1.2	1.2

I. What effect would centralization or consolidation of the six CNTECHTRA Instructor Training Schools have on the following variables? (continued)	(Check (✓) One Column) MAJOR DECREASE -3	MODERATE DECREASE -2	SLIGHT DECREASE -1	NO EFFECT 0	SLIGHT INCREASE 1	MODERATE INCREASE 2	MAJOR INCREASE 3	MEAN	STD DEV
- CURRICULUM VARIABLES									
25. Management-TPC Review Frequency: (The frequency of Program Coordinator (TPC) review of the schools curriculum; by correspondence and by personal visit.)	1	1	1	7	8	6	2	.8	1.4
26. Revision, Ease of: (Simplicity of timely changes, additions, deletions, and improvements to the curriculum.)	1	0	7	5	8	4	6	1.1	1.5
27. Feedback Application: (Simplicity of updating the curriculum based on feedback inputs from previous graduates and other sources.)	1	0	1	6	8	5	5	1.1	1.4
28. Innovation: (The number of new ideas, experiments, and one-of-a-kind efforts to improve the curriculum.)	1	3	4	5	8	3	2	.3	1.5
29. Task Analysis, Ease of: (The simplicity of the task of analyzing job performance and designing/developing training to meet job requirements consisting of Job Task Analysis and Training Task Analysis processes.)	0	1	2	9	7	4	3	.8	1.2
30. Criterion - Referenced Measurement Effectiveness: (Effectiveness of the pass/fail system of grading as opposed to norm-referenced measurement.)	0	0	2	16	4	2	2	.5	1.0
31. New Course/Track Development Capability: (Development of new courses or tracks to be taught by the Instructor School Staff.)	0	1	1	5	11	4	4	1.1	1.2
32. Special Requirements: (Anything under the heading of curriculum not listed previously that would be effected by centralization.) (State)	0	3	1	15	3	2	2	.2	1.2
33. Self-Paced Instruction Development Capability: (Capacity for more courses or phases to be considered for development in sequence and format that allows each student to progress at a rate commensurate with his ability.)	1	1	2	11	6	3	2	.4	1.3
- EQUIPMENT, MEDIA, AIDS VARIABLES									
34. Quantity, Required: (The total amount necessary to operate the Instructor Schools.)	8	2	7	1	5	1	2	-.8	1.9
35. Quality: (The attributes, properties, or characteristics of the equipment considered good.)	1	0	4	9	8	2	2	.4	1.3
36. Operating Technician Requirement: (The number of personnel needed to operate the equipment (e.g., TV, projectors).)	3	6	5	3	5	3	1	-.5	1.7
37. Maintenance Technician Requirement: (The number of personnel needed to maintain the equipment.)	3	5	5	2	6	4	1	-.3	1.8
38. Innovation Capability: (Capability of the staff to originate, design and construct new/novel equipment.)	0	2	3	8	9	2	2	.5	1.2
39. Utilization Efficiency: (Use of the above equipment more efficiently in a training situation.)	0	0	1	6	12	5	2	1.0	.9
40. Selection Capability: (Capability of the staff to more accurately select the proper equipment for the curriculum.)	0	0	2	10	9	4	1	.7	1.0

I. What effect would centralization or consolidation of the six CNTECHTRA Instructor Training Schools have on the following variables? (continued)

(Check (✓) One Column)

	MAJOR DECREASE -3	MODERATE DECREASE -2	SLIGHT DECREASE -1	NO EFFECT 0	SLIGHT INCREASE 1	MODERATE INCREASE 2	MAJOR INCREASE 3	MEAN	STD DEV
- EQUIPMENT, MEDIA, AIDS VARIABLES (continued)									
41. Modernization Capability: (The ability to keep equipment updated.)	0	1	1	7	8	8	1	.9	1.1
- OTHER VARIABLES									
42. Contractor Training: (The possibility of using an outside civilian contractor to teach under Navy administration.)	0	2	3	8	2	6	5	.8	1.6
43. Unique Training Situations: (The ability to cope with unique situations; such as students at Newport being predominantly officers, or students at Groton being predominantly in submarine service.	3	3	4	12	3	0	1	-.5	1.4
44. Expansion Capability: (The ability to enlarge the school to meet future requirements.)	1	1	3	5	6	8	2	.8	1.5
45. Flexibility: (The capability to deal with fluctuations in student input.)	2	1	6	5	7	3	2	.2	1.6

II. Assuming the decision was made to centralize (consolidate) the six schools, what effect would the following factors have on your choice of locations?

	(Check (✓) One Column) NONE 0	SLIGHT 1	MODERATE 2	MAJOR 3	KEY FACTOR 4			MEAN	STD DEV
1. Climate: (The general atmospheric and weather conditions.)	8	6	4	2	6			1.7	1.5
2. Available Buildings: (Availability of a ready built, ready for occupancy building.)	2	2	3	10	9			2.8	1.2
3. New Buildings: (The requirements for a new building to be constructed primarily for the Instructor School.)	1	3	7	7	8			2.7	1.1
4. R and D Facility: (The proximity of a Research and Development Facility, such as NPRDC (Naval Personnel Research and Development Center) provides services to a centralized school.)	4	7	8	5	2			1.8	1.2
5. CNTECHTRA: (The proximity of CNTECHTRA to a centralized school.)	11	7	7	1	0			.9	.9
6. Support Facility: (The proximity of a centralized school to a print shop, training aids shop, art shop and other support units.)	2	3	3	6	12			2.9	1.3
7. Tech Schools: (The proximity of Class A, C and other technical training schools to a centralized school.)	4	9	4	2	7			2.0	1.5
8. Housing and Messing Facilities: (The requirement for support of staff, students, and dependents.)	0	1	1	12	12			3.3	.7

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III. All factors and variables above considered, what is your overall opinion concerning centralization or consolidation of the six schools into fewer locations? (Check one or more)

A. Strongly recommended 5

B. Appears worthy of cost and qualitative analysis 11

C. A good idea, but there is no urgency 4

D. No improvement over the present system 2

E. A poor idea, not as good as present system 2

F. A very poor idea with serious disadvantages 2

MEAN 2.7
STD DEV 1.5

IV. In your opinion, what is the most desirable configuration for location of instructor training schools?

A. One East Coast and one West Coast School 15

B. One East Coast, one West Coast and one Central School 9

C. One academy, combining all six schools 0

D. Other OR NONE: 2

Best location (base(s)) for your choice of above (1) San Diego (15) (2) Norfolk (8) (3) Memphis (5)

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V. What is the main reason for your opinion for or against centralization? (Circle one and explain) FOR 18 AGAINST 8

COMMENTS:

(Continue comments on back, or attach sheets if desired.)

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APPENDIX C

QUANTITATIVE QUESTIONNAIRE

TAEG Report No. 38

TRAINING ANALYSIS AND EVALUATION GROUP
ORLANDO, FLORIDA

DATE _____

COURSE TITLE* _____

COURSE LOCATION _____

COURSE CATALOG NO. _____

QUESTIONNAIRE

GROUP ORIGIN AND DESTINATION OF TRAINEES FOR FY 1975
INSTRUCTOR TRAINING SCHOOL

Location of Last Duty Station (Show totals from each location)**	Location of Assignment Upon Termination or Graduation (Show totals going to each location)**

* Use separate sheet for each course: Instructor Basic, Navy Schools Management, Programmed Instruction Techniques, Instructor Shipboard, and Management and Supervision, plus other formal courses taught by the Instructor School staff.

** Give major city only which will permit computation of travel costs. Example: 21 from San Diego; 30 to Great Lakes.

TAEG Report No. 38

TRAINING ANALYSIS AND EVALUATION GROUP
ORLANDO, FLORIDA

DATE _____
SCHOOL (COURSES) LOCATION _____

QUESTIONNAIRE

TOTAL PERSONNEL REQUIREMENTS FOR INSTRUCTOR TRAINING SCHOOL* FY 1975

1.	Man-Years Devoted to All Courses* (FY 1975) Combined
Director	
Senior (Lead) Instructors	
Instructors (Civilian and/or Military)	
Secretarial	
Other	

2. Number of Students on Per Diem During FY 1975 (Total all courses)	
3. Total enrollment (all courses)* FY 1975: INPUT	
OUTPUT	
4. Predicted Annual INPUT (Total all courses): FY 1976	
FY 1977	
FY 1978	
FY 1979	
FY 1980	

*School Includes: Instructor Basic, Navy Schools Management, Programmed Instructor Techniques, Instructor Shipboard, Management and Supervision Courses, plus other formal courses taught by the Instructor School staff.

TAEG Report No. 38

TRAINING ANALYSIS AND EVALUATION GROUP
ORLANDO, FLORIDA

DATE_____

COURSE NAME & LOCATION_____

QUESTIONNAIRE

INDIVIDUAL STUDENT ORIGIN AND DESTINATION
INSTRUCTOR TRAINING SCHOOL*

1. Student's Name_____ Rate_____

2. Prior to reporting to this Instructor School Course were you stationed on a ship? Yes _____ No _____

   If yes: What was name of ship? _____

   What was home port of ship? _____

   Did you travel to "IT" School from home port? Yes ____ No ____
   If no, what was nearest city from which you traveled to "IT" School? _____

3. If you were not stationed on a ship, what was the location of your last duty station prior to reporting to Instructor Training School?

   _____

4. Method of transportation by which you traveled to your present location from your last duty station.
   a. Commercial airplane _____
   b. Military airplane _____
   c. Other (specify) _____

5. Cost of transportation to government (if known) _____

6. Are you receiving per diem while you are attending this course?
   a. Yes _____ b. No _____

   If yes, what is the amount per day? _____
   Total days you will be on per diem? _____

7. To which location will you report after completion of this course?

   a. City (nearest) _____
   b. Duty Station (if different from city) _____

*School includes: Instructor Basic, Navy Schools Management, Programmed Instructor Techniques, Instructor Shipboard, Management and Supervision Courses, plus other formal courses taught by the Instructor School staff.

APPENDIX D

CENTRALIZED INSTRUCTOR SCHOOLS CONCEPT PLANNING REPORT: MODIFICATION OF EXISTING FACILITIES

The information contained in this appendix incorporates a planning report relating to the modification of existing facilities for centralized instructor training. The information was provided at TAEG's request by Facilities Plans, CNTECHTRA, with the assistance of the TPC; Instructor Training Schools; the Officer-in-Charge, Naval Management Schools Group; and NATTC, Memphis, Tennessee.

The following represents CNTECHTRA's best estimate of facility requirements for the various alternatives:

Facilities Requirements	FY 1978 Cost Estimate
Single-Site Concept	
BEQ 488 Men	$5,100,000
Training Building	2,560,000
Alterations to Building 750	9,207
	$7,669,207
Dual-Site Concept	
BEQ 286 Men	$3,150,000
Training Building	2,560,000
Alterations to Building 750	6,626
	$5,716,626
Triple-Site Concept	
BEQ 156 Men	$1,900,000
Training Building	2,560,000
Alterations to Building 750	3,575
	$4,463,575

It was stated in CNTECHTRA's report dated 25 May 1976 that recent decisions involving the continuation of certain aviation C7 courses have made the relocation of displaced courses impossible without MILCON.

TAEG Report No. 38

CENTRALIZED INSTRUCTOR TRAINING
SINGLE-SITE CONCEPT

I. Building S-750 Modification Requirements

A. Installations

1. Six permanent/semipermanent soundproofed bulkheads constructed from ceiling to floor to divide rooms 243, 245, 250, 251, 253, and 254 into smaller rooms approximately half present size.

2. Two door installation--one between room 245 and passageway and one between rooms 237 and 238.

B. Removals

1. Two semipermanent bulkheads dividing rooms 236, 236A, and 236B.

II. Instructor/Support Billet Requirements

A. Instructor Requirements

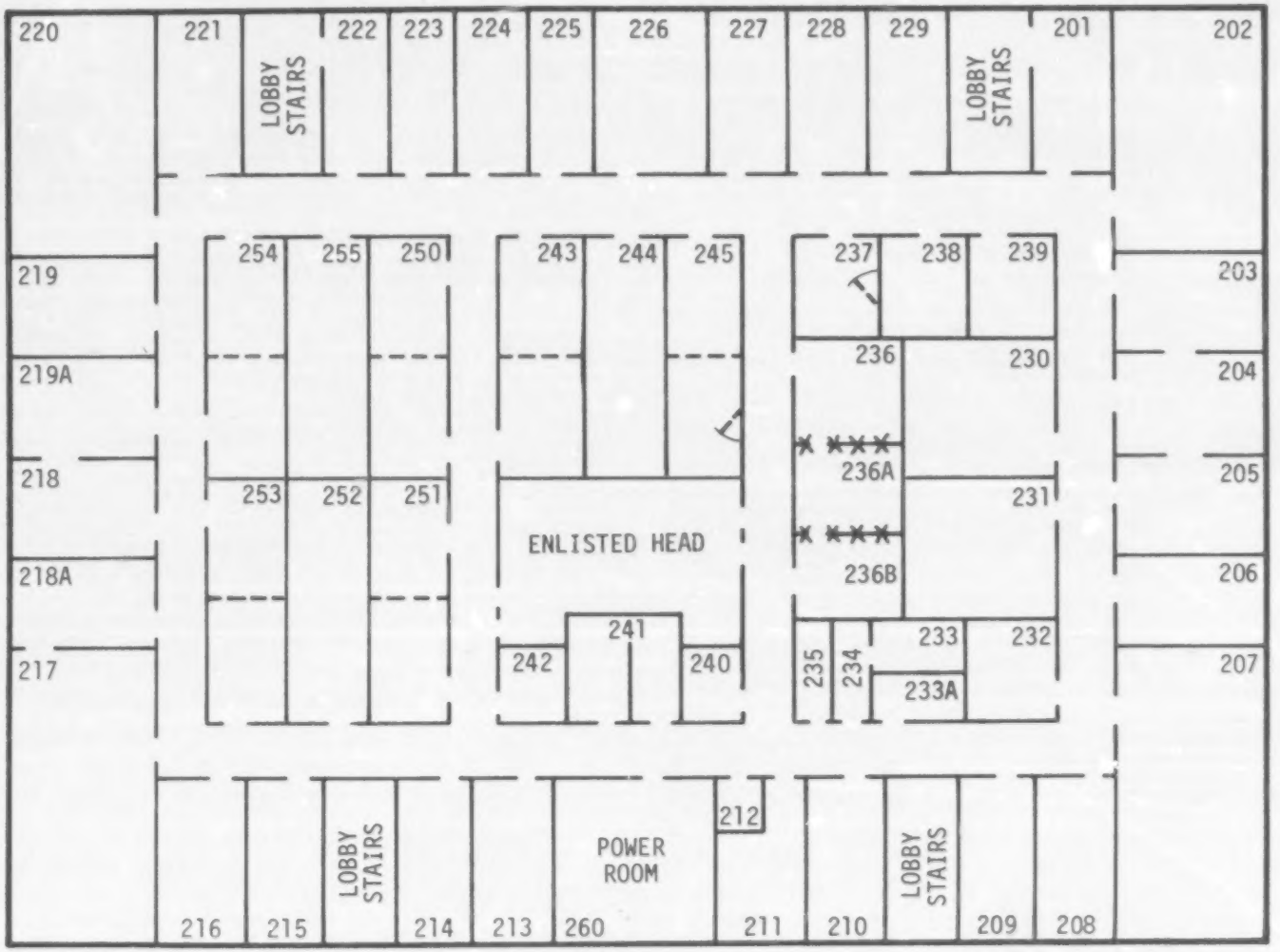
1.	Instructor Basic Course	37
2.	Program Instruction Techniques	4
3.	Leadership and Management Training	12
4.	Naval Schools Management Course	4
5.	Instructor Shipboard	6

B. Support Requirements

1.	Department Head	O-5
2.	Division Officer	O-4
	Division Officer	O-4
3.	Leading Chief Petty Officer	E-9
4.	Senior Education Specialist	GS-1710-13
5.	Division Education Specialist	GS-1710-11/12
	Division Education Specialist	GS-1710-11/12

6.	Testing/Records Education Specialist	GS-1710-09
	Testing Assistant	E-7
7.	Supply Coordinator	E-6/7 (SK-AK)
8.	Clerical	
	Department Secretary	GS-318-05
	Division Clerk/Typist	GS-322-03
	Division Clerk/Typist	GS-322-03
	Division Clerk/Typist	GS-322-03
	Records Clerk/Typist	GS-322-03
9.	Training Aids Operator/Maintenance	E-6/7 (TD)
	Training Aids Operator/Maintenance	E-5/6 (TD)
10.	Custodial	
	Custodian	WG-3566-3
	Custodian	WG-3566-2

SINGLE SITE CONCEPT



NATTC MEMPHIS
S-750
SECOND DECK

---- REQUIRED INSTALLATION

✕✕✕ REQUIRED REMOVAL

CENTRALIZED INSTRUCTOR TRAINING
DUAL-SITE CONCEPT

I. Building S-750 Modification Requirements

A. Installations

1. Four permanent/semipermanent soundproofed bulkheads constructed from ceiling to floor to divide rooms 243, 250, 253, and 254 into smaller rooms approximately half present size.

2. One door installation between rooms 237 and 238.

B. Removals

1. Two semipermanent bulkheads dividing rooms 236, 236A, and 236B.

II. Instructor/Support Billet Requirements

A. Instructor Requirements

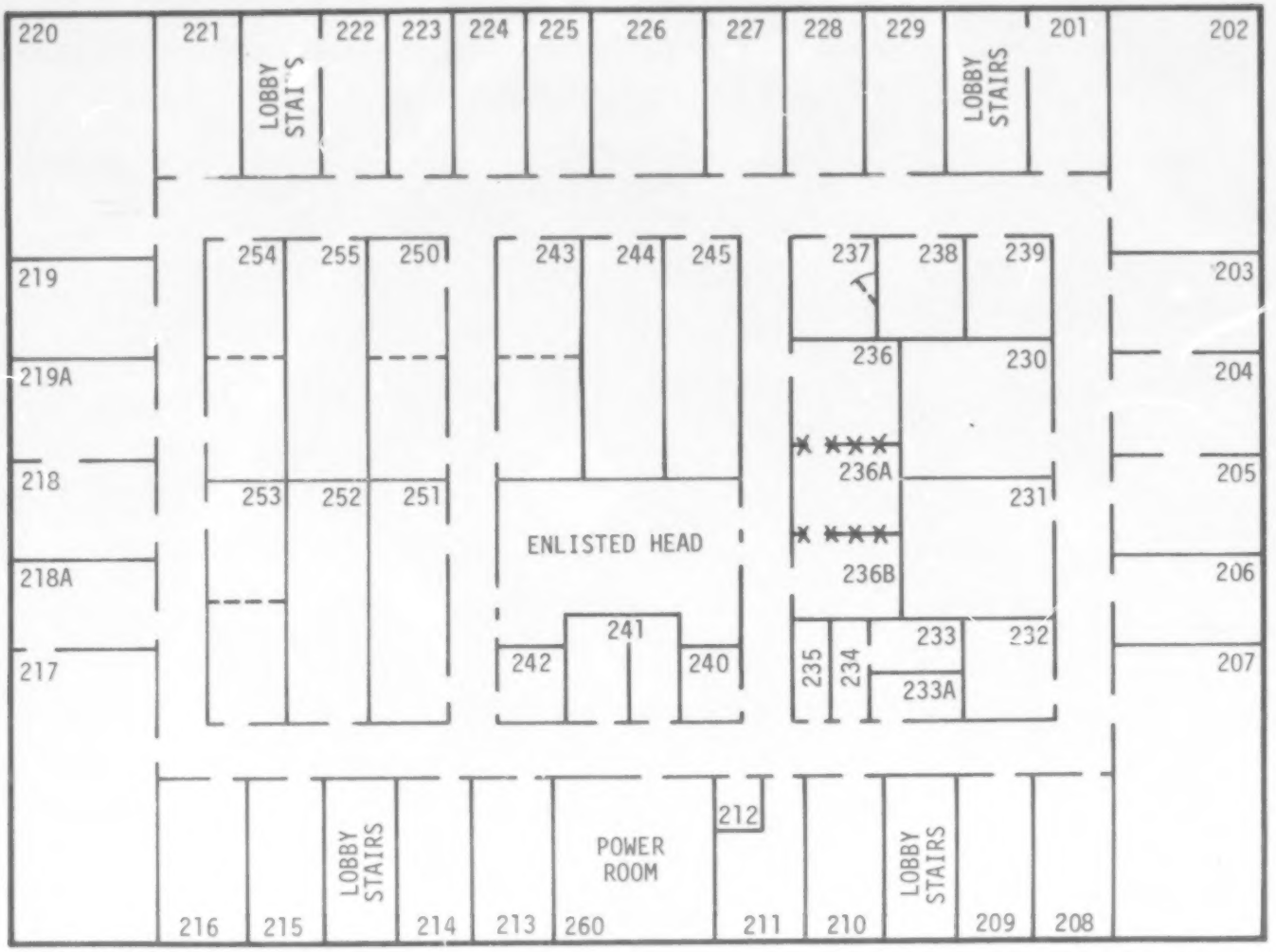
1.	Instructor Basic Course	28
2.	Program Instruction Techniques	2
3.	Leadership and Management Training	6
4.	Naval Schools Management Course	2
5.	Instructor Shipboard	3

B. Support Requirements

1.	Department Head	O-5
2.	Division Officer	O-4
	Division Officer	O-4
3.	Leading Chief Petty Officer	E-9
4.	Senior Education Specialist	GS-1710-12
5.	Division Education Specialist	GS-1710-11
	Division Education Specialist	GS-1710-11
6.	Testing/Records Education Specialist	GS-1710-07

	Testing Assistant	E-7
7.	Supply Coordinator	E-6 (SK-AK)
8.	Clerical	
	Department Secretary	GS-318-04
	Division Clerk/Typist	GS-322-03
	Division Clerk/Typist	GS-322-03
	Division Clerk/Typist	GS-322-03
9.	Training Aids Operator/Maintenance	E-6/7 (TD)
	Training Aids Operator/Maintenance	E-5/6 (TD)
10.	Custodial	
	Custodian	WG-3566-3
	Custodian	WG-3566-2

DUAL SITE CONCEPT



NATTC MEMPHIS
S-750
SECOND DECK

---- REQUIRED INSTALLATION

✱✱✱ REQUIRED REMOVAL

CENTRALIZED INSTRUCTOR TRAINING TRIPLE-SITE CONCEPT

I. Building S-750 Modification Requirements

A. Installations

1. One permanent/semipermanent soundproofed bulkhead constructed from ceiling to floor to divide room 245 into two smaller rooms approximately half present size.

2. Two door installation--one between room 245 and passageway, and one between rooms 237 and 238.

B. Removals

1. Two semipermanent bulkheads dividing rooms 236, 236A, and 236B.

II. Instructor/Support Billet Requirements

A. Instructor Requirements

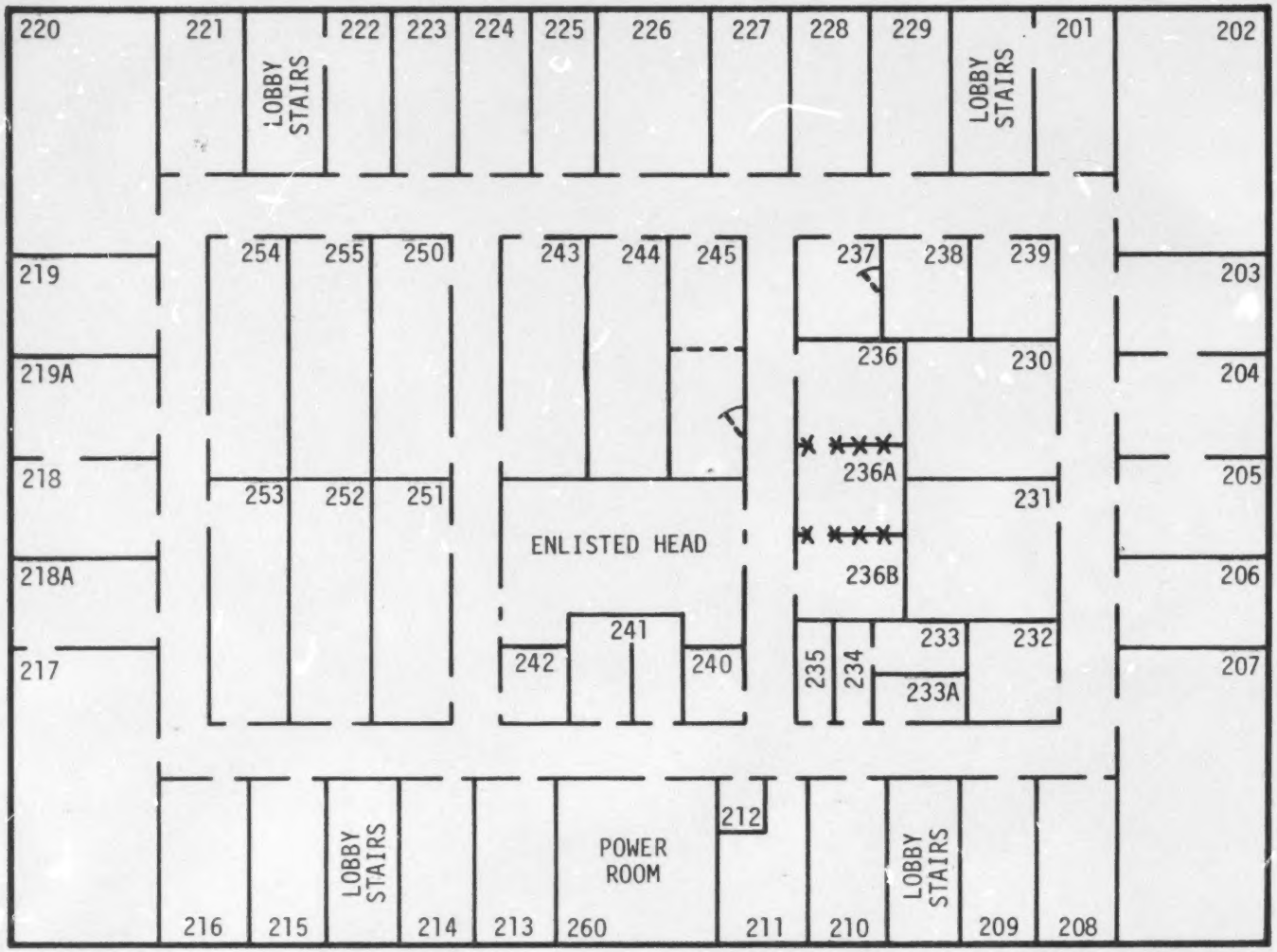
1.	Instructor Basic Course	13
2.	Program Instruction Techniques	2
3.	Leadership and Management Training	2
4.	Naval Schools Management Course	2
5.	Instructor Shipboard	0

B. Support Requirements

Increase in tasking would require limited additional support personnel outside the scope of the present Management Schools Department structure. Additional requirements are:

1.	Training Aids Operator/Maintenance	E-5/6 (TD)
2.	Custodian	WG-3566-3

TRIPLE SITE CONCEPT



NATTC MEMPHIS
S-750
SECOND DECK

---- REQUIRED INSTALLATION

✕✕✕ REQUIRED REMOVAL

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APPENDIX E

CENTRALIZED INSTRUCTOR SCHOOLS CONCEPT PLANNING
REPORT: NEW CONSTRUCTION

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INTRODUCTION

The TAEG, by its letter of 22 December 1975, requested technical assistance from the Naval Facilities Engineering Command in developing requirements and cost data for three concepts for consolidating the six existing instructor training schools into one, two, and three locations. As a result of a meeting between representatives of TAEG, NATTC Memphis, and NAVFACENGCOM, Southern Division, on 13 and 14 January 1976, it was agreed that NAVFACENGCOM would provide a study of new construction as an alternative for centralizing instructor training. The information contained in this appendix is the result of this study. Data provided by TAEG were used in computing facility requirements. Facility requirement computations, cost data, a "space use" concept plan, and a list of "excess" facilities at San Diego, Memphis, and Norfolk are included. A description of the typical instructor school courses used to compile the data can be found at the back of this appendix.

BASIS FOR CONCEPT STUDY

1. Existing instructor training schools are to be consolidated to either a one, two, or three location concept utilizing the proposed schedules in this appendix.

2. This study is based on new construction for requirements and costs listed.

3. The two and three location concepts are made assuming that the school at San Diego will remain "as is," and only considers requirements and costs at the other locations. Facilities location considered as follows:

One location	- San Diego or Memphis
Two location	- San Diego and Memphis
Three location	- San Diego, Memphis, and Norfolk

4. Student loadings and administrative instructor loadings to remain constant (5 to 8 years projection).

5. It is projected that approximately 15 percent of students in each course will be receiving self-paced instruction during the next 5 years.

6. All costs listed are Budget FY 1976 costs.

7. Barracks and dining facilities to be built to accommodate the AOB at each location considered.

STAFF AND STUDENTS FOR PROPOSED CENTRALIZATION (FY 76+)

	One School	Two Schools		Three Schools		
		(San Diego)	(Memphis)	(San Diego)	(Memphis)	(Norfolk)
STAFF						
Director (04, 05)	1	1	1	1	1	1
Asst. Director (03, 04)	1	1	1	1	1	1
Senior Education Spec. (GS-12, 13)	1	1	1	1	1	1
Senior Instructors/Supv (E-9, O-2/O-3, GS-11)	2	2	2	2	2	2
Instructors (E-7-9, GS-9)	59	30	30	30	18	18
Secretary (GS-3 & 4)	5	3	3	3	2	2
Other (GS-3)	3	2	2	2	2	2
TOTAL	72	40	40	40	27	27
STUDENTS (Projected)						
Instructor Basic	3548	1248	2300	1248	975	1325
Programmed Instruction	256	100	156	100	96	60
Management & Supervision	1738	1100	638	1100	238	400
Navy Schools Management	506	238	268	238	268	-
Inst. Ship.	637	434	203	434	-	203
Sub. Training System	76	-	76	-	-	76
Off. Inst. Indoctrination	24	-	24	-	-	24
TOTAL	6785	3120	3665	3120	1577	2088

PROPOSED COURSE SCHEDULES
DATA FOR DETERMINATION OF FACILITY DESIGN AND COST ESTIMATES OF INSTRUCTOR TRAINING SCHOOLS UNDER CNTECHTRA, FOR ALTERNATIVE CONSOLIDATION OPTIONS
*SINGLE LOCATION CONCEPT

Course No.	Title	Course Length (Wks)	Total Annual Input	Optimum Class Size	Starts per Year	Classes per Convening Date	Freq.	Rooms Reqd.
A-012-0011	Instructor Basic	4	3548	20	50	4	Wkly	36 Sm 4 Lg
A-012-0023	Instructor Shipboard	2	637	13	49	1	Wkly	2 Sm 1 Lg
A-012-0036	Programmed Instruction Techniques	3	256	12	22	1	Bi-Wkly	2 Lg
A-012-0028	Leadership & Management (Management & Supervision)	2	1738	17	50	2	Wkly	4 Lg
A-7B-0010	Navy Schools Management	2	506	12	42	1	Wkly	2 Lg
A-012-0033	Submarine Training System	1	76	13	6	1	Bi-Mthly	1 Lg
A-7B-0015	School Administration of Programmed Instruction	1	- - - NOT CURRENTLY OFFERED - - -					
F-00-014	Officer Instructor Indoctrination	1	24	6	4	1	Qtrly	**1 Sm
		TOTAL	6785	AOB 440				

*Primary: Memphis
Alternates: San Diego, Norfolk; other appropriate locations
**As Available

NOTE: Statistical data based upon predicted student input for all CNTT Instructor Training Schools, as published in NTTC Training Operations Plan, FY 1975.

PROPOSED COURSE SCHEDULES
DATA FOR DETERMINATION OF FACILITY DESIGN AND COST ESTIMATES OF INSTRUCTOR TRAINING SCHOOLS UNDER CNTECHTRA, FOR ALTERNATIVE CONSOLIDATION OPTIONS
*TWO LOCATION CONCEPT
(Memphis Location Only)

Course No.	Title	Course Length (Wks)	Total Annual Input	Optimum Class Size	Starts per Year	Classes per Convening Date	Freq.	Rooms Reqd.
A-012-0011	Instructor Basic	4	2300	23	50	2	Wkly	18 Sm 2 Lg
A-012-0023	Instructor Shipboard	2	203	13	16	1	Every 3rd Wk	1 Sm 1 Lg
A-012-0036	Programmed Instruction Techniques	3	156	13	12	1	Every 4th Wk	1 Lg
A-012-0028	Leadership & Management (Management & Supervision)	2	638	13	50	1	Wkly	2 Lg
A-7B-0010	Navy Schools Management	2	268	11	25	1	Alt Wks	1 Lg
A-012-0033	Submarine Training System	1	76	13	6	1	Alt Mo.	1 Lg
A-7B-0015	School Administration of Programmed Instruction	1	- - -	NOT CURRENTLY OFFERED			- - -	
F-00-014	Officer Instructor Indoctrination	1	24	6	4	1	Qtrly	**1 Sm
		TOTAL	3665	AOB 266				

*Primary: Memphis and San Diego
Alternate: Norfolk or other eastern appropriate locations
**As Available

NOTE: Statistical data based upon predicted student input as published in NTTC Training Operations Plan, FY 1975, excluding San Diego.

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PROPOSED COURSE SCHEDULES
DATA FOR DETERMINATION OF FACILITY DESIGN AND COST ESTIMATES OF INSTRUCTOR TRAINING SCHOOLS UNDER CNTECHTRA, FOR ALTERNATIVE CONSOLIDATION OPTIONS
*THREE LOCATION CONCEPT

Course No.	Title	Course Length (Wks)	Total Annual Input	Optimum Class Size	Starts per Year	Classes per Convening Date	Freq.	Rooms Reqd.
A-012-0011	Instructor Basic	4	975	20	50	1	Wkly	1 Lg 9 Sm
A-012-0023	Instructor Shipboard	2	- - -	NOT CURRENTLY OFFERED			- - -	
A-012-0036	Programmed Instruction Techniques	3	96	12	8	1	Every 6th Wk	1 Lg
A-012-0028	Leadership & Management (Management & Supervision)	2	238	15	16	1	Every 3rd Wk	1 Lg
A-7B-0010	Navy Schools Management	2	268	11	25	1	Every 2 Wks	1 Lg
A-012-0033	Submarine Training System	1	- - -	NOT CURRENTLY OFFERED			- - -	
A-7B-0015	School Administration of Programmed Instruction	1	- - -	NOT CURRENTLY OFFERED			- - -	
F-00-014	Officer Instructor Indoctrination	1	- - -	NOT CURRENTLY OFFERED			- - -	
		TOTAL	1577	AOB 138				

*Memphis location only

NOTE: Statistical data based upon predicted student input for Memphis and Great Lakes as published in NTTC Training Operations Plan, FY 1975. San Diego remains as is.

PROPOSED COURSE SCHEDULES
DATA FOR DETERMINATION OF FACILITY DESIGN AND COST ESTIMATES OF INSTRUCTOR TRAINING SCHOOLS UNDER CNTECHTRA, FOR ALTERNATIVE CONSOLIDATION OPTIONS
*THREE LOCATION CONCEPT

Course No.	Title	Course Length (Wks)	Total Annual Input	Optimum Class Size	Starts per Year	Classes per Convening Date	Freq.	Rooms Reqd.
A-012-0011	Instructor Basic	4	1325	20	50	1-30 Wks 2-20 Wks	Wkly	2 Lg 18 Sm
A-012-0023	Instructor Shipboard	2	203	13	16	1	Every 3rd Wk	1 Lg
A-012-0036	Programmed Instruction Techniques	3	60	10	6	1	Every 2 Mo.	1 Lg
A-012-0028	Leadership & Management (Management & Supervision)	2	400	16	25	1	Every 2 Wks	1 Lg
A-7B-0010	Navy Schools Management	2	0	-	-	NOT CURRENTLY OFFERED	-	-
A-012-0033	Submarine Training System	1	76	13	6	1	Alt Mo.	**1 Lg
A-7B-0015	School Administration of Programmed Instruction	1	0	-	-	NOT CURRENTLY OFFERED	-	-
F-00-014	Officer Instructor Indoctrination	1	24	6	4	1	Qtrly	**1 Sm
		TOTAL	2088	AOB 183				

*Norfolk location only
**As Available

NOTE: Statistical data based upon student input for Norfolk, Groton, and Newport, as published in NTTC Training Operations Plan, FY 1975. San Diego remains as is.

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GENERAL CHARACTERISTICS OF SPECIALIZED AREAS IN INSTRUCTOR TRAINING SCHOOLS

1. REMEDIAL LEARNING CENTER

Use: To permit students to accomplish makeup and remedial study

Basic equipment required:

"Wet" Carrels

Estimated student capacity required for:

a. Single location: 30 students
b. Two location: 15 students
c. Three location: 10 students

2. STUDENT REFERENCE LIBRARY

Use: Student research and study

Resource Materials Center

Basic equipment required:

Typical library arrangement; tables and dry carrels for study, shelves for books, manuals, and materials

Estimated student user population:

a. Single location: 320
b. Two location: 160
c. Three location: 160

3. STUDENT INSTRUCTIONAL MATERIALS WORKSHOP

Use: Student preparation of displays, charts, etc., for practice teaching

Basic equipment required:

Drawing boards, layout tables, shelves for expendable supplies

Estimated student capacity required for:

a. Single location: 30
b. Two location: 15
c. Three location: 10

4. TRAINING AIDS STORAGE ROOM

Use: Storage and issue of displays, mock-ups, cutaways, small parts, etc., for student practice teaching

Basic equipment required:

Storage shelves and cabinets

Estimated capacity required for:

a. Single location: 750 sq. ft.
b. Two location: 500 sq. ft.
c. Three location: 300 sq. ft.

5. AUDITORIUM

Use: Briefings and special assemblies of staff and students in large groups

Basic equipment required:

Typical auditorium arrangement; stage, screen, podium, sound and light controls, theatre type seats.
Audio-visual presentation capability.

Estimated capacity required:

a. Single facility only: 350 persons (maximum)

BACHELOR ENLISTED QUARTERS (BEQ) REQUIREMENTS*

For purposes of this study, the building of a BEQ to accommodate the AOB at the one, two, and three locations is considered. The actual requirement, however, must be determined as a part of the Bachelor Housing Survey performed at the station(s) at which the school(s) will be located. The average breakdown by grade of students was determined from TAEG records to be as follows: E2-E4--3%, E5-E6--75%, E7-E9--22%.

Using AOB figures: one location--440; two locations, Memphis--266; three locations, Memphis--138, Norfolk--183.

NAVFAC criteria gross sq. ft. (SF) allowances for Enlisted Quarters by grade: E2-E4--162 SF/Mn, E5-E6--243 SF/Mn, E7-E9--486 SF/Mn.

BEQ requirements are therefore computed to be:

One Location Concept:

E2-E4	.03 x 440 =	13 Mn	x 162 SF/Mn	=	2,106 SF
E5-E6	.75 x 440 =	330 Mn	x 243 SF/Mn	=	80,190 SF
E7-E9	.22 x 440 =	97 Mn	x 486 SF/Mn	=	47,142 SF
		Total BEQ Requirement			129,438 SF

Two Location Concept:

E2-E4	.03 x 266 =	8 Mn	x 162 SF/Mn	=	1,296 SF
E5-E6	.75 x 266 =	200 Mn	x 243 SF/Mn	=	48,600 SF
E7-E9	.22 x 266 =	59 Mn	x 486 SF/Mn	=	24,300 SF
		Total BEQ Requirement			74,196 SF

Three Location Concept:

Memphis

E2-E4	.03 x 138 =	4 Mn	x 162 SF/Mn	=	648 SF
E5-E6	.75 x 138 =	104 Mn	x 243 SF/Mn	=	25,272 SF
E7-E9	.22 x 138 =	30 Mn	x 486 SF/Mn	=	14,580 SF
		Total BEQ Requirement			40,500 SF

Norfolk

E2-E4	.03 x 183 =	5 Mn	x 162 SF/Mn	=	810 SF
E5-E6	.75 x 183 =	137 Mn	x 243 SF/Mn	=	33,291 SF
E7-E9	.22 x 183 =	40 Mn	x 486 SF/Mn	=	19,440 SF
		Total BEQ Requirement			53,541 SF

* It is assumed that officer students can be accommodated in existing facilities at stations considered, due to the small numbers of officers involved.

DINING FACILITIES REQUIREMENTS*

NAVFAC P-80 criteria specifies messing facility capacity to be 70 percent of BEQ capacity. Gross space allowance is shown on enclosed table:

SPACE CRITERIA FOR ENLISTED DINING FACILITIES

Feeding Capacity	No. of Seats	Serving and Feeding Parameters				Gross SF Allowance (5)
		Serving lines No. & Type (1)	Serving Rates Men/Min	Total Serving Time (Min) (2)(4)	Total Serv./Eating Time (Min) (3)(4)	
80 to 150	70	B (modif.)	3.5	23 to 43	41 to 61	2,300
151 to 250	100	B	5.0	30 to 50	48 to 68	3,600
251 to 400	158	A	8.0	31 to 50	49 to 68	5,200

SINGLE LOCATION CONCEPT

BEQ capacity 440 Mn

440 x .7 = 308 Mn feeding capacity requirement from table = 5,200 SF

TWO LOCATION CONCEPT

BEQ capacity 266 Mn

266 x .7 = 186 Mn feeding capacity requirement from table = 3,600 SF

THREE LOCATION CONCEPT - MEMPHIS

BEQ capacity 138 Mn

138 x .7 = 97 Mn feeding capacity requirement from table = 2,300 SF

THREE LOCATION CONCEPT - NORFOLK

BEQ capacity 183 Mn

183 x .7 = 128 Mn feeding capacity requirement from table = 2,300 SF

* It is assumed that officer students can be accommodated in existing facilities at stations considered, due to the small numbers of officers involved.

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REQUIREMENTS SUMMARY

	Training Space	Enlisted Quarters	Dining Facility
Single Location	37,040 SF	129,438 SF	5,200 SF
Two Location*			
Memphis Location only	18,663 SF	74,196 SF	3,600 SF
Three Location*			
Memphis	10,395 SF	40,500 SF	2,300 SF
Norfolk	13,748 SF	53,541 SF	2,300 SF
TOTAL	24,143 SF	94,041 SF	4,600 SF

* San Diego remains as is.

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COST ESTIMATES FOR NEW CONSTRUCTION REQUIRED FOR EACH ALTERNATIVE

All estimates are FY 1976 budget costs and are based on current bid experience or on congressional limitations (in the case of Enlisted Mens' Quarters). To adjust for different locations, multiply these costs by the given cost factor (San Diego--1.08, Memphis--1.0, and Norfolk--1.0).

A. Single Location Concept

	Facility	Total SF	Total Facility Cost
1.	Academic Training Bldg	37,040	$1,510,000
2.	Enlisted Barracks	129,438	4,980,000
3.	Dining Facility	5,200	390,000
			$6,880,000

B. Two Location Concept

1. San Diego*
2. Second Location

	Facility	Total SF	Total Facility Cost
1.	Academic Training Bldg	18,663	$ 803,500
2.	Enlisted Barracks	74,196	2,856,000
3.	Dining Facility	3,600	277,500
			$3,937,000

C. Three Location Concept

1. San Diego*
2. Memphis

	Facility	Total SF	Total Facility Cost
1.	Academic Training Bldg	10,395	$ 472,000
2.	Enlisted Barracks	40,500	1,560,000
3.	Dining Facility	2,300	183,000
			$2,215,000

3. Norfolk

	Facility	Total SF	Total Facility Cost
1.	Academic Training Bldg	13,748	$ 620,000
2.	Enlisted Barracks	53,541	2,061,000
3.	Dining Facility	2,300	183,000
			$2,864,000

* Assuming the use of current San Diego Instructor School, BEQ, and dining facilities.

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EXCESS FACILITIES LISTED FROM DEPARTMENT
OF THE NAVY EXCESS FACILITIES PLAN

Activity - Naval Station, San Diego, California

Bldg. No.	Cat. Code	Description	Type Constr.	Yr. Built	SF
157	61010	Admin. Office	S	1943	14,943
99	74001	Exchange Retail	S	1942	32,170
107	74086	Retail Warehouse	S	1942	21,341

Activity - Naval Air Station, San Diego, California

Bldg. No.	Cat. Code	Description	Type Constr.	Yr. Built	SF
294	55010	Dispensary	S	1948	7,000
255	61010	Admin.	S	1948	7,572
275	61010	Admin.	S	1948	8,177
415	61010	Admin.	S	1948	23,884

Activity - Naval Air Station, Memphis; Millington, Tennessee

Bldg. No.	Cat. Code	Description	Type Constr.	Yr. Built	SF
S-30	721-11	105 Mn BEQ	S	1943	6,762
S-31	721-11	105 Mn BEQ	S	1943	6,762
S-32	721-11	105 Mn BEQ	S	1943	6,762
S-35	721-11	105 Mn BEQ	S	1943	6,762
S-40	721-11	105 Mn BEQ	S	1943	6,762
S-41	721-11	105 Mn BEQ	S	1943	6,762
S-42	721-11	80 Mn BEQ	S	1943	6,762
S-130	171-20	Applied Inst. Bldg.	S	1943	4,114
N-75	721-15	41 Mn Recruit Bks.	S	1942	8,900
N-77	721-15	41 Mn Recruit Bks.	S	1942	8,900

Activity - Naval Air Station, Norfolk, Virginia

Bldg. No.	Cat. Code	Description	Type Constr.	Yr. Built	SF
SP67	441-10	General Warehse Navy	S	1942	17,668
SP68	722-20	Det. Dining Facility (Enlisted Men)	P	1942	17,668
SP96	171-10	Academic Instr. Bldg	P	1943	2,599

Activity - Amphibious Base, Norfolk, Virginia

Bldg. No.	Cat. Code	Description	Type Constr.	Yr. Built	SF
2007	721-11	BEQ E-1/E-4	S	1943	166 Mn
3396	721-12	BEQ E-5/E-6	S	1947	134 Mn

Activity - Naval Station, Norfolk, Virginia

Bldg. No.	Cat. Code	Description	Type Constr.	Yr. Built	SF
CFP26	740-12/ 25/34	Red Cross/Navy Relief, Fam Ser Center, Thrift Shop	S	1944	16,592

S - Semipermanent (wood)
P - Permanent (Brick/Block)

SINGLE LOCATION CONCEPT

Specialized support area

1.	Remedial Learning Center 30 students X 40 SF/student		1200 SF	
2.	Instructors Workspace/Offices 59 X 90 SF		5310 SF	
3.	Student Break Area 440 AOB X .6 X 6 SF		1584 SF	
4.	Reference Library			3098 SF
	a. Reading area	440(AOB) X .25 X 75	2750	
	b. Stack area	1000/100 X 6.6	66	
			2816	
	Staff area	.10 (4a + 4b) .10 (2816)	282	
			3098 SF	
5.	Admin spaces			1400 SF
	Director (05)	1 X 150	150	
	*Administrative Staff	4 X 100	400	
	Secretary	5 X 60	300	
	Other	3 X 60	180	
			1030	
	Conference Room		300 SF	
	Admin Storage		70 SF	
			1400 SF	
6.	Training Aid Storage		750 SF	
7.	Student Instructional Material Workshop 30 X 45 SF		1250 SF	
8.	Auditorium 350 seats X 9 SF/seat		3150 SF	
9.	Records storage area		500 SF	
		Total Net Support Space	18,248 SF	

SUMMARY
SINGLE LOCATION REQUIREMENT

Classroom space	11,384 SF
Support space	18,248 SF
	29,632
	X 1.25**
Total Requirement	37,040 SF

* Assistant Director, Education Specialists, Senior Instructors/Supervisors
** Converts net requirement to gross SF to allow for heads, corridors, wall thickness, stairwells.

CLASSROOM SPACE

COLUMN HEADINGS - EXPLANATION

1. Days per week course meets
2. Weeks per year course meets
3. Optimum students per class
4. Total students processed per year
5. Number of classrooms required for course
6. Maximum students present per class
7. NAVFAC P-80 space allowance per student (sq. ft.)
8. Size requirement per room (column 6 X column 7) (sq. ft.)
9. Total requirements for all rooms (column 5 X column 8) (sq. ft.)
10. Percent utilization - a factor which measures the efficiency of classroom occupancy for each specific course.

$$\frac{\text{Column 1 X Column 2}}{250^*}$$

$$\frac{\text{Meeting days per week X weeks per year course meets}}{\text{250 days per work year}}$$

*250 days is considered to be an optimum number of days in a school year.

A "meeting day" is defined as an 8-hour day.

SINGLE LOCATION - CLASSROOM SPACE REQUIREMENTS

Course	Classes 1	Classes 2	Students 3	Students 4	Classrooms 5	Classrooms 6	SF/Student 7	Room Size 8	Total Req. 9	% Utilization 10
1. Instructor Basic										
Lecture	5	50	17	3548	4	17	22	374	1496	100
Self-paced	5	50	3	-	4	3	40	120	480	100
"Split-class" space	5	50	7	3548	36	7	22	154	5544	100
2. Instructor Shipboard										
Lecture	5	49	11	637	1	11	22	242	242	98
Self-paced	5	49	2	-	1	2	40	80	80	98
"Split-class" space	5	49	7	637	2	7	22	154	308	98
3. Programmed Instruction Tech										
Lecture	5	44	20	256	2	10	22	220	440	61*
Self-paced	5	44	4	-	2	2	40	80	160	61*
4. Leadership & Management										
Lecture	5	50	14	1734	4	14	22	308	1232	100
Self-paced	5	50	3	-	4	3	40	120	480	100
5. Navy Schools Management										
Lecture	5	42	10	505	2	10	22	220	440	84
Self-paced	5	42	2	-	2	2	40	80	160	84
6. Submarine Training System										
Lecture	5	6	11	76	1	11	22	242	242	12
Self-paced	5	6	2	-	1	2	40	80	80	12
7. Officer Instr. Indoctrination										
Lecture	5	4	5	24	1	5	22	110	use avail.	08
Self-paced	5	4	1	-	1	1	40	40	room	08
								Total classroom space		11,384

*NOTE: Due to scheduling, Program Instructor Techniques needs 1 room 44 weeks of the year and an additional room 22 weeks of the year; therefore, it uses 1 room 88% of the time and another room 44% of the time. The effective utilization of 2 rooms is:

1 x .88 = .88
1 x .44 = .44
1.32/2 = 61%

TWO LOCATION CONCEPT

Support areas.

1.	Remedial Learning Center 15 students X 40 SF/student		600 SF	
2.	Instructor Workspace/Offices 30 X 90 SF		2700 SF	
3.	Student Break area 266 AOB X .6 X 6		958 SF	
4.	Reference Library			1865 SF
	a. Reading area	266(AOB) X .25 X 25	1662	
	b. Stack area	500/100 X 6.6	33	
			1695	
	Staff area	.10 (4a + 4b) .10 (1408)	170	
			1865 SF	
5.	Admin spaces			1170 SF
	Director (05)	1 X 150	150	
	*Administrative Staff	4 X 100	400	
	Secretary	3 X 60	180	
	Other	2 X 60	120	
			850	
	Conference Room		250 SF	
	Admin Storage		70 SF	
			1170 SF	
6.	Training Aid Storage		500 SF	
7.	Student Instructional Materials Workshop 15 X 45		625 SF	
8.	Records storage area		300 SF	
		Total Support Space (net)	8,718 SF	

SUMMARY
TWO LOCATION REQUIREMENT

		Memphis	San Diego
Classroom space		6,212 SF	***
Support space		8,718 SF	
	Total Net Requirement	14,930	
		X 1.25**	
	Total Requirement	18,663 SF	

* Assistant Director, Education Specialists, Senior Instructors/Supervisors.
** Converts net requirement to gross SF to allow for heads, corridors, wall thickness, stairwells.
*** San Diego to remain as is.

TWO LOCATIONS - CLASSROOM SPACE REQUIREMENTS

Course	Classes 1	2	Students 3	4	Classrooms 5	6	SF/Student 7	Room Size 8	Total Req. 9	% Utilization 10
1. Instructor Basic										
Lecture	5	50	19	2300	2	19	22	418	836	100
Self-paced	5	50	4	-	2	4	40	160	320	100
"Split-class" space	5	50	8	2300	18	8	22	176	3168	100
2. Instructor Shipboard										
Lecture	5	32	11	203	2	11	22	242	484	48*
Self-paced	5	32	2	-	2	2	40	80	160	48*
"Split-class" space										
3. Programmed Instruction Tech										
Lecture	5	48	11	156	1	11	22	242	242	96
Self-paced	5	48	2	-	1	2	40	80	80	96
4. Leadership & Management										
Lecture	5	50	11	638	2	11	22	242	484	100
Self-paced	5	50	2	-	2	2	40	80	160	100
5. Navy Schools Management										
Lecture	5	50	9	268	1	9	22	198	198	100
Self-paced	5	50	2	-	1	2	40	80	80	100
6. Submarine Training System										
Lecture	5	6	11	76	1	11	22	242	use avail. room	12.5
Self-paced	5	6	2	-	1	2	40	80		12.5
7. Officer Instr. Indoctrination										
Lecture	5	4	5	24	1	5	22	110	use avail. room	08
Self-paced	5	4	1	-	1	1	40	40		08
								Total classroom space		6,212

*NOTE: Due to scheduling, Instructor Shipboard needs 1 room 32 weeks of the year and an additional room 16 weeks of the year; therefore, it uses 1 room 64% of the time and another room 44% of the time. The effective utilization of 2 rooms is:

1 x .64 = .64
1 x .32 = .32
.96/2 = 48%

THREE LOCATION CONCEPT
Memphis, Norfolk

Support areas.		Memphis		Norfolk
1. Remedial Learning Center 10 students X 40 SF/student		400 SF		400 SF
2. Instructor Workspace/Offices 18 X 90 SF		1620 SF		1620 SF
3. Student Break Area 138 AOB X .6 X 6 SF		497 SF		659 SF
4. Reference Library				
a. Reading area	138(AOB) X .25 X 25 =	862	183(AOB) X .25 X 25 =	1144
b. Stack area	500/100 X 6.6	33	500/100 X 6.6	33
		895		1177
Staff area	.10 (4a + 4b) .10 (895)	90	.10 (4a + 4b) .10 (1177)	118
		985 SF		1295 SF
5. Admin spaces				
Director 05	1 X 150 =	150		150
*Administrative Staff	4 X 100 =	400		400
Secretary	2 X 60 =	120		120
Other	2 X 60 =	120		120
		790		790
Conference Room		200 SF		200 SF
Admin Storage		50 SF		50 SF
		1040 SF		1040 SF
6. Training Aid Storage		300 SF		300 SF
7. Student Instructional Materials Workshop 10 X 45		450 SF		450 SF
8. Records Storage Area		200 SF		200 SF
	Total	5492 SF	Total	5964 SF

SUMMARY
THREE LOCATION REQUIREMENT

	Memphis	Norfolk	San Diego
Classroom space	2,824 SF	5,034 SF	***
Support space	5,492 SF	5,964 SF	
Net Requirement	8,316 SF	10,998 SF	
	X 1,25**	X 1.25**	
Total Requirement	10,395 SF	13,748 SF	

10,395 Memphis
13,748 Norfolk
24,143 Sum of requirement at both schools

* Assistant Director, Education Specialists, Senior Instructors/Supervisors
** Converts net requirement to gross SF to allow for heads, corridors, wall thickness, stair wells.
*** San Diego to remain as is.

MEMPHIS LOCATION
THREE LOCATIONS - CLASSROOM SPACE REQUIREMENTS

Course	Classes 1	2	Students 3	4	Classrooms 5	6	SF/Student 7	Room Size 8	Total Req. 9	% Utilization 10
1. Instructor Basic										
Lecture	5	50	17	975	1	17	22	374	374	100
Self-paced	5	50	3	-	-	3	40	120	120	100
"Split-class" space	5	50	7	975	9	7	22	154	1,386	100
2. Instructor Shipboard										
Lecture	-	-	-	-	-	-	-	-	-	-
Self-paced	-	-	-	-	-	-	-	-	-	-
"Split-class" space	-	-	-	-	-	-	-	-	-	-
3. Programmed Instruction Tech										
Lecture	5	24	10	96	1	10	22	220	220	48
Self-paced	5	24	2	-	1	2	40	80	80	48
4. Leadership & Management										
Lecture	5	32	13	238	1	13	22	286	286	64
Self-paced	5	32	2	-	1	2	40	80	80	64
5. Navy Schools Management										
Lecture	5	50	9	268	1	9	22	198	198	100
Self-paced	5	50	2	-	1	2	40	80	80	100
6. Submarine Training System										
Lecture	-	-	-	-	-	-	-	-	-	-
Self-paced	-	-	-	-	-	-	-	-	-	-
7. Officer Instr. Indoctrination										
Lecture	-	-	-	-	-	-	-	-	-	-
Self-paced	-	-	-	-	-	-	-	-	-	-
								Classroom total	2,824	

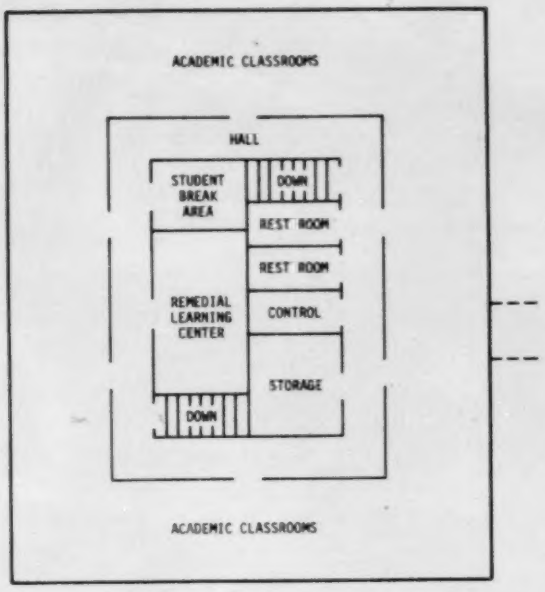
NORFOLK LOCATION
THREE LOCATIONS - CLASSROOM SPACE REQUIREMENTS

Course	Classes 1	Classes 2	Students 3	Students 4	Classrooms 5	Classrooms 6	SF/Student 7	Room Size 8	Total Req. 9	% Utilization 10
1. Instructor Basic										
Lecture	5	50	17	1325	2	17	22	374	748	70*
Self-paced	5	50	3	-	2	3	40	120	240	70*
"Split-class" space	5	50	7	1325	18	7	22	154	2772	70*
2. Instructor Shipboard										
Lecture	5	32	11	203	1	11	22	242	242	64
Self-paced	5	32	2	-	1	2	40	80	80	64
"Split-class" space	5	32	7	203	2	7	22	154	308	64
3. Programmed Instruction Tech										
Lecture	5	18	8	60	1	8	22	176	176	36
Self-paced	5	18	2	60	1	2	40	80	80	36
4. Leadership & Management										
Lecture	5	50	14	400	1	14	22	308	308	100
Self-paced	5	50	2	-	1	2	40	80	80	100
5. Navy Schools Management										
Lecture	-	-	-	-	-	-	-	-	-	-
Self-paced	-	-	-	-	-	-	-	-	-	-
6. Submarine Training System										
Lecture	5	6	11	76	1	11	22	242	use avail.	12
Self-paced	5	6	2	-	-	2	40	80	room	12
7. Officer Instr. Indoctrination										
Lecture	5	4	5	24	1	5	22	110	use avail.	08
Self-paced	5	4	1	-	-	1	40	40	room	08

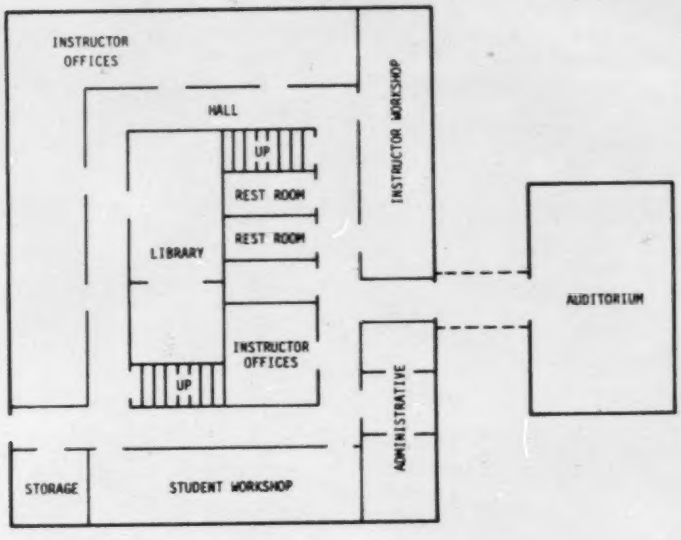
Classroom total 5,034

NOTE: Due to scheduling, Instructor Basic requires 1 lecture space 50 weeks of the year and an additional space 20 weeks of the year. Also required are 9 "split-class" spaces 50 weeks of the year and an additional 9 space(s) 20 weeks of the year. Effective utilization is:
$(1 \times 1.0) + (1 \times .4) = \frac{1.4}{2} = 70\%$ (2 rooms) $(9 \times 1.0) + (9 \times .4) = \frac{12.6}{18} = 70\%$ (18 rooms)

SPACE RELATIONSHIP
SINGLE LOCATION CONCEPT



SECOND FLOOR



FIRST FLOOR

COURSE DESCRIPTIONS
INSTRUCTOR TRAINING SCHOOL COURSES*

Course No. -- A-012-0011

Title -- Instructor Basic

Scope -- Principles of learning, public speaking, planning instruction, methods of instruction, test construction, use of training aids, analysis of instruction, preparation and use of instruction sheets, shop layout, safety precautions, and practice teaching.

Course No. -- A-012-0023

Title -- Instructor Shipboard

Scope -- Characteristics of effective shipboard training procedures for conducting an effective shipboard training program.

Course No. -- A-012-0036

Title -- Programmed Instruction Techniques

Scope -- Provides a thorough grounding in the basic techniques of programmed instruction and develops the trainees' abilities to write programmed instructional materials for use in Navy courses of instruction. The trainee should, with approximately six months of practical exercise in writing programmed instruction materials, be able to develop effective materials.

Course No. -- A-012-0028

Title -- Management and Supervision

Scope -- The course provides the essentials of management, problem solving methods, conference leadership, styles of management, communication, group processes, managing change, motivation theory, cooperation vs. competition, frustrations and conflict resolution, and human resource management.

*NOTE: Except for the Instructor Basic Course, these courses are used for relative planning purposes only and at present may not necessarily exist in the location or manner described throughout this report and may not include all courses currently taught.

Course No. -- A-7B-0010

Title -- School Administration (Navy Schools Management)

Scope -- Instructional procedures and techniques of administration of Navy schools.

Course No. -- A-012-0033

Title -- Submarine Training System

Scope -- Writing of Personnel Performance Profiles, Training Path System, Instructor Guide Curricula, and Submarine Training Evaluation Plan.

Course No. -- F-00-014

Title -- Officer Instructor Indoctrination

Scope -- Laws of learning, planning instruction, oral questioning, training aids, evaluation of instruction, curriculum instruction, tests instruction, programmed instruction and practice teaching.

APPENDIX F

ANNUAL PERSONNEL COSTS

This appendix shows the annual personnel costs for the present system (FY 1975) and the projected annual personnel costs for one site, two sites, and three sites (based on a student input of 6785).

ANNUAL PERSONNEL COSTS
PRESENT SYSTEM
(FY 1975)

	San Diego	Great Lakes	Memphis	Norfolk	Newport	Groton	Total	Per Unit Cost	Total Cost
			Man-Years						
Director (O-5, O-3)	2	1	2	1	1	.5	(O-5) 2 (O-3)5.5	51,165 35,779	$ 102,330 196,784
Senior Instructor (GS-12, 11) (O-2, E-9)	5	5	3	2	1	1	(GS-12)5 (GS-11)5 (O-2) 3 (E-9) 4	21,970 18,423 26,253 35,195	109,850 92,115 78,759 140,780
Instructor (E-8, GS-9)	30	27.36	13.14	21	1	6.5	(E-8) 84 (GS-9)15	30,163 15,278	2,533,692 229,170
Secretary (GS-4,3)	4	1	2	3	1	1	(GS-4) 3 (GS-3) 9	9,040 8,050	27,120 72,450
Other (GS-3) (E-4)	2	2		2		.8	(GS-3)3.4 (E-4) 3.4	8,050 16,217	27,370 55,137
TOTAL*	43	36.36	20.14	29	4	9.8	142.3		$3,665,557*
(Student Input)	(2666)	(870)	(1056)	(1184)	(113)	(323)	(6212)		

* This table was prepared given the FY 1975 Student thru-put of 6212. With a student input of 6785 (TOP 1976) the annual labor cost of the present system would be approximately $4,004,000 with 154.5 man years of staff work. San Diego's portion would increase to 3120 students with a staff of 49 man years costing $1,332,000 annually.

PROJECTED ANNUAL PERSONNEL COSTS
SINGLE SITE
(STUDENT INPUT - 6785)

POSITION	GRADE	MAN-YEARS	UNIT COST	TOTAL COST
Director	O-5	1	$51,165	$ 51,165
Assistant Director	O-4	2	41,898	83,796
Senior Ed. Spec.	GS-13	1	25,962	25,962
Division Ed. Spec.	GS-11	2	18,423	36,846
Leading Chief Petty Officer	E-9	1	35,195	35,195
Mil. Instructor	E-8	53.5	30,163	1,613,720
Civ. Instructor	GS-9	9.5	15,278	145,141
Secretary	GS-4	1	9,040	9,040
	GS-3	4	8,050	32,200
Other	E-6	4	20,769	83,076
TOTAL		79		$2,116,151

PROJECTED ANNUAL PERSONNEL COSTS
TWO SITES*
(STUDENT INPUT - 6785)

POSITION	GRADE	MAN YEARS	UNIT COST	TOTAL COST
Director	O-5	1	$ 51,165	$ 51,165
Div. Officer	O-4	2	41,898	83,796
Senior Ed. Spec.	GS-12	1	21,970	21,970
Lead Ch. Petty Off.	E-9	1	35,195	35,195
Div. Ed. Spec.	GS-11	2	18,423	36,846
Mil. Instructors	E-8	31.5	30,163	950,134
Civ. Instructors	GS-9	5.5	15,278	84,029
Secretary	GS-4	1	9,040	9,040
	GS-3	3	8,050	24,150
Other	E-6	3	20,769	62,307
	GS-7	1	12,518	12,518
Total		52		$1,397,000
(San Diego)		(49)		($1,332,000)
TOTAL		101		$2,729,000

* The above breakdown is for the non-San Diego site, most likely Memphis (student input of 3665).

PROJECTED ANNUAL PERSONNEL COSTS
THREE SITES*
(STUDENT INPUT – 6785)

MEMPHIS (INPUT 1577)

POSITION	GRADE	MAN YEARS	UNIT COST	TOTAL COST
Director	O-5	1	51,165	51,165
Asst. Director	O-4	1	41,898	41,898
Sr. Ed. Spec.	GS-12	1	21,970	21,970
Supervisor	GS-11	1	18,423	18,423
	O-2	1	26,253	26,253
Mil. Instructor	E-8	16	30,163	482,608
Civ. Instructor	GS-9	3	15,278	45,834
Secretary	GS-3	3	8,050	24,150
	E-4	1	16,217	16,217
Total		28		$728,518

NORFOLK (INPUT 2088)

POSITION	GRADE	MAN YEARS	UNIT COST	TOTAL COST
Director	O-5	1	$ 51,165	$ 51,165
Asst. Director	O-4	1	41,898	41,898
Sr. Ed. Spec.	GS-12	1	21,970	21,970
Supervisor	GS-11	1	18,423	18,423
	O-2	1	26,253	26,253
Mil. Instructor	E-8	19	30,163	573,097
Civ. Instructor	GS-9	3	15,278	45,834
Secretary	GS-3	3	8,050	24,150
	E-4	1	16,217	16,217
Total		31		$819,000

San Diego	$1,332,000
Memphis	729,000
Norfolk	819,000
Total	$2,880,000

* San Diego would remain intact and the information for San Diego can be found on page 112.

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